```
DDDDDDDDDDD     EEEEEEEEEEEEEEE  BBBBBBBBBBB      UUU         UUU     GGGGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUU         UUU     GGGGGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUU         UUU     GGGGGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG    GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG    GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG    GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG          GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG          GGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUUUUUUUUUUUUUU     GGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUUUUUUUUUUUUUU     GGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUUUUUUUUUUUUUU     GGGGGGGGG
```

FILEID**DBGIFTHEN

```
DDDDDDDD    BBBBBBBB      GGGGGGGG    IIIIII    FFFFFFFFFF  TTTTTTTTTT  HH      HH  EEEEEEEEEE  NN      NN
DDDDDDDD    BBBBBBBB      GGGGGGGG    IIIIII    FFFFFFFFFF  TTTTTTTTTT  HH      HH  EEEEEEEEEE  NN      NN
DD      DD  BB      BB  GG              II      FF              TT      HH      HH  EE          NN      NN
DD      DD  BB      BB  GG              II      FF              TT      HH      HH  EE          NN      NN
DD      DD  BB      BB  GG              II      FF              TT      HH      HH  EE          NNNN    NN
DD      DD  BB      BB  GG              II      FF              TT      HH      HH  EE          NNNN    NN
DD      DD  BBBBBBBB    GG              II      FFFFFFFF        TT      HHHHHHHHHH  EEEEEEEE    NN  NN  NN
DD      DD  BBBBBBBB    GG              II      FFFFFFFF        TT      HHHHHHHHHH  EEEEEEEE    NN  NN  NN
DD      DD  BB      BB  GG    GGGGGG    II      FF              TT      HH      HH  EE          NN    NNNN
DD      DD  BB      BB  GG    GGGGGG    II      FF              TT      HH      HH  EE          NN    NNNN
DD      DD  BB      BB  GG        GG    II      FF              TT      HH      HH  EE          NN      NN      ....
DD      DD  BB      BB  GG        GG    II      FF              TT      HH      HH  EE          NN      NN      ....
DDDDDDDD    BBBBBBBB      GGGGGG      IIIIII    FF              TT      HH      HH  EEEEEEEEEE  NN      NN      ....
DDDDDDDD    BBBBBBBB      GGGGGG      IIIIII    FF              TT      HH      HH  EEEEEEEEEE  NN      NN      ....

LL              IIIIII      SSSSSSSS
LL              IIIIII      SSSSSSSS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II        SSSSSS
LL                II        SSSSSS
LL                II              SS
LL                II              SS
LL                II              SS
LL                II              SS
LLLLLLLLLL      IIIIII    SSSSSSSS
LLLLLLLLLL      IIIIII    SSSSSSSS
```

```
;     1          0001  0 MODULE DBGIFTHEN (IDENT = 'V04-000') =
;     2          0002  0
;     3          0003  1 BEGIN
;     4          0004  1
;     5          0005  1 !
;     6          0006  1 !**************************************************************************
;     7          0007  1 !*                                                                        *
;     8          0008  1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                              *
;     9          0009  1 !*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.                *
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;    15          0015  1 !*  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY  *
;    16          0016  1 !*  OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY  *
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;    18          0018  1 !*                                                                        *
;    19          0019  1 !*  THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE  *
;    20          0020  1 !*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT  *
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;    25          0025  1 !*                                                                        *
;    26          0026  1 !*                                                                        *
;    27          0027  1 !**************************************************************************
;    28          0028  1 !
;    29          0029  1
;    30          0030  1 !++
;    31          0031  1 ! FACILITY:
;    32          0032  1 !
;    33          0033  1 !       DEBUG
;    34          0034  1 !
;    35          0035  1 ! ABSTRACT:
;    36          0036  1 !
;    37          0037  1 !       This module contains the parse and execution networks for the
;    38          0038  1 !       DEBUG control structures: IF...THEN...ELSE, WHILE...DO,
;    39          0039  1 !       FOR loops, and REPEAT...DO
;    40          0040  1 !
;    41          0041  1 ! ENVIRONMENT:
;    42          0042  1 !
;    43          0043  1 !       VAX/VMS
;    44          0044  1 !
;    45          0045  1 ! AUTHOR:
;    46          0046  1 !
;    47          0047  1 !       Richard Title
;    48          0048  1 !
;    49          0049  1 ! CREATION DATE:
;    50          0050  1 !
;    51          0051  1 !       1-10-82
;    52          0052  1 !
;    53          0053  1 ! VERSION:
;    54          0054  1 !
;    55          0055  1 !       V03.0-001
;    56          0056  1 !
;    57          0057  1 ! MODIFIED BY:
```

```
;    58          0058  1 !
;    59          0059  1 !
;    60          0060  1 ! REVISION HISTORY:
;    61          0061  1 !
;    62          0062  1 !--
```

```
;    64          0063  1 !
;    65          0064  1 ! TABLE OF CONTENTS:
;    66          0065  1 !
;    67          0066  1
;    68          0067  1 FORWARD ROUTINE
;    69          0068  1         DBG$NPARSE_IF,                  ! Parse network
;    70          0069  1         DBG$NEXECUTE_IF,                ! Execution network
;    71          0070  1         DBG$NPARSE_WHILE,               ! Parse network
;    72          0071  1         DBG$NEXECUTE_WHILE,             ! Execution network
;    73          0072  1         DBG$NPARSE_FOR,                 ! Parse network for FOR
;    74          0073  1         DBG$NEXECUTE_FOR,               ! Execution network for FOR
;    75          0074  1         DBG$NPARSE_REPEAT,              ! Parse network
;    76          0075  1         DBG$NEXECUTE_REPEAT;            ! Execution network
;    77          0076  1
;    78          0077  1 ! REQUIRE FILES:
;    79          0078  1 !
;    80          0079  1 REQUIRE 'SRC$:DBGPROLOG.REQ';
;    81          0213  1 LIBRARY 'LIB$:DBGGEN.L32';
;    82          0214  1
;    83          0215  1 EXTERNAL
;    84          0216  1     dbg$gb_language: BYTE,              ! Current language setting
;    85          0217  1     dbg$gb_radix: VECTOR[3, BYTE],      ! Radix settings
;    86          0218  1     dbg$gb_take_cmd: BYTE,              ! Flag that controls command taking
;    87          0219  1     dbg$gl_cishead: REF cis$link;       ! Head of command input stream
;    88          0220  1
;    89          0221  1 EXTERNAL ROUTINE
;    90          0222  1     dbg$def_sym_add,                    ! Add a defined symbol
;    91          0223  1     dbg$get_memory,                     ! Allocate permanent memory
;    92          0224  1     dbg$get_tempmem,                    ! Allocates space
;    93          0225  1     dbg$ncis_add,                       ! Add a link to the command input stream
;    94          0226  1     dbg$nget_symid,                     ! Obtain a symid list
;    95          0227  1     dbg$nmake_arg_vect,                 ! Constructs error messages
;    96          0228  1     dbg$nmatch,                         ! Tries to match the next token
;    97          0229  1     dbg$nnext_word,                     ! Gets next word from input
;    98          0230  1     dbg$nparse_expression,              ! Language specific expression interpreter
;    99          0231  1     dbg$nread_name,                     ! Pick up a name
;   100          0232  1     dbg$nsave_break_buffer: NOVALUE,    ! Saves the action clause in a buffer
;   101          0233  1     dbg$nsyntax_error,                  ! Reports a syntax error
;   102          0234  1     dbg$ntype_conv,                     ! Language specific type converter
;   103          0235  1     dbg$rel_memory: NOVALUE,            ! Releases memory from DEBUG memory pool
;   104          0236  1     dbg$sta_lock_symid: NOVALUE;        ! Lock a symid list
;   105          0237  1
;   106        M 0238  1 MACRO report_error =
;   107        M 0239  1         BEGIN
;   108        M 0240  1         .message_vect =
;   109        M 0241  1             (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;   110        M 0242  1              THEN
;   111        M 0243  1                  dbg$nmake_arg_vect(dbg$_needmore)
;   112        M 0244  1              ELSE
;   113        M 0245  1                  dbg$nsyntax_error (dbg$nnext_word (.input_desc)));
;   114        M 0246  1         RETURN sts$k_severe;
;   115          0247  1         END%;
```

```
;  117          0248  1 GLOBAL ROUTINE dbg$nparse_if(input_desc, verb_node, message_vect) =
;  118          0249  1 !
;  119          0250  1 ! Functional Description
;  120          0251  1 !
;  121          0252  1 !       ATN parse network for the IF verb.
;  122          0253  1 !       This routine takes a verb node for the IF verb, and a string
;  123          0254  1 !       descriptor for the remaining (unparsed) input.
;  124          0255  1 !       A command execution tree is built. The form of the tree is:
;  125          0256  1 !
;  126          0257  1 !        -----------       -----------       -----------       -----------
;  127          0258  1 !       | verb node |-->--| noun node |-->--| noun node |[-->--| noun node |]
;  128          0259  1 !        -----------       -----------       -----------       -----------
;  129          0260  1 !
;  130          0261  1 !       The first noun node points to a value descriptor for the IF clause.
;  131          0262  1 !       The second noun node points to a counted string with the THEN clause.
;  132          0263  1 !       The third noun node, which may be absent, points to a counted string
;  133          0264  1 !       with the ELSE clause.
;  134          0265  1 !
;  135          0266  1 ! Formal Parameters
;  136          0267  1 !
;  137          0268  1 !       input_desc      - A longword containing the address of the
;  138          0269  1 !                         command input descriptor.
;  139          0270  1 !       verb_node       - A longword containing the address of the verb node.
;  140          0271  1 !       message_vect    - The address of a longword to contain the address
;  141          0272  1 !                         of a standard message argument vector.
;  142          0273  1 !
;  143          0274  1 ! Implicit Inputs
;  144          0275  1 !
;  145          0276  1 !       none
;  146          0277  1 !
;  147          0278  1 ! Implicit Outputs
;  148          0279  1 !
;  149          0280  1 !       On success, the command execution tree is constructed.
;  150          0281  1 !       On failure, a message argument vector is constructed or obtained.
;  151          0282  1 !
;  152          0283  1 ! Routine value
;  153          0284  1 !
;  154          0285  1 !       sts$k_success (1)       - Success. Command execution tree constructed.
;  155          0286  1 !       sts$k_severe  (4)       - Failure. Error encountered. Message argument
;  156          0287  1 !                                 constructed and returned.
;  157          0288  1 !
;  158          0289  1 ! Side Effects
;  159          0290  1 !
;  160          0291  1 !       Permanent storage is allocated for the string holding the THEN
;  161          0292  1 !       clause; this is released in DBG$NEXECUTE_IF after execution
;  162          0293  1 !       of the THEN clause.
;  163          0294  1 !
;  164          0295  1
;  165          0296  2 BEGIN
;  166          0297  2
;  167          0298  2 MAP
;  168          0299  2     input_desc  : REF dbg$stg_desc,
;  169          0300  2     verb_node   : REF dbg$verb_node;
;  170          0301  2
;  171          0302  2 BIND
;  172          0303  2     dbg$cs_cr           = UPLIT BYTE (1, dbg$k_car_return),
;  173          0304  2     dbg$cs_left_paren   = UPLIT BYTE (1, dbg$k_left_parenthesis),
```

```
;  174          0305  2     dbg$cs_else          = UPLIT BYTE (4, 'ELSE'),
;  175          0306  2     dbg$cs_then          = UPLIT BYTE (4, 'THEN');
;  176          0307  2
;  177          0308  2 LOCAL
;  178          0309  2     link,                                   ! Temporary to links in the command
;  179          0310  2                                             !     execution tree.
;  180          0311  2     noun_node : REF dbg$noun_node,          ! A node in the command execution tree.
;  181          0312  2     radix,                                  ! Holds the current radix setting.
;  182          0313  2     status;                                 ! Holds return status from subroutine
;  183          0314  2                                             !     calls.
;  184          0315  2
;  185          0316  2
;  186          0317  2
;  187          0318  2     ! Create and link a noun node
;  188          0319  2     !
;  189          0320  2     noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  190          0321  2     verb_node[dbg$l_verb_object_ptr] = .noun_node;
;  191          0322  2
;  192          0323  2
;  193          0324  2     ! Determine the current radix.
;  194          0325  2     !
;  195          0326  2     radix  = .dbg$gb_radix[dbg$b_radix_input];
;  196          0327  2
;  197          0328  2
;  198          0329  2     ! Obtain a value descriptor for the condition. The first noun node
;  199          0330  2     ! points to this descriptor.
;  200          0331  2     !
;  201          0332  2     STATUS = DBG$NPARSE_EXPRESSION (.INPUT_DESC, .RADIX,
;  202          0333  2                         NOUN_NODE [DBG$L_NOUN_VALUE],
;  203          0334  2                         TOKEN$K_TERM_THEN, .MESSAGE_VECT);
;  204          0335  2
;  205          0336  2
;  206          0337  2     ! The return status should be "warning", meaning that an expression
;  207          0338  2     ! was parsed and further input reamins. If an expression was parsed
;  208          0339  2     ! but no input remains, then DBG$NPARSE_EXPRESSION will return success.
;  209          0340  2     ! In this context, it is an error since "IF condition" by itself
;  210          0341  2     ! is an error.
;  211          0342  2     !
;  212          0343  2     IF .status EQL sts$k_success THEN SIGNAL(DBG$_NEEDMORE);
;  213          0344  2
;  214          0345  2
;  215          0346  2     ! Severe status is also an error.
;  216          0347  2     !
;  217          0348  2     IF .status EQL sts$k_severe
;  218          0349  2     THEN
;  219          0350  2         RETURN sts$k_severe;
;  220          0351  2
;  221          0352  2
;  222          0353  2     ! Eat the THEN
;  223          0354  2     !
;  224          0355  2     IF NOT dbg$nmatch (.input_desc, dbg$cs_then, 1)
;  225          0356  2     THEN
;  226          0357  3         BEGIN
;  227          0358  3         .message_vect =
;  228          0359  4             (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  229          0360  4              THEN
;  230          0361  4                  dbg$nmake_arg_vect (dbg$_needmore)
```

```
;  231          0362  4              ELSE
;  232          0363  3                 dbg$nsyntax_error (dbg$nnext_word (.input_desc)));
;  233          0364  3
;  234          0365  3          RETURN sts$k_severe;
;  235          0366  2          END;
;  236          0367  2
;  237          0368  2
;  238          0369  2      ! Allocate and link a noun node for the THEN clause.
;  239          0370  2      !
;  240          0371  2      link = noun_node [dbg$l_noun_link];
;  241          0372  2      noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  242          0373  2      .link = .noun_node;
;  243          0374  2
;  244          0375  2      ! Eat the left parenthesis which we require be present.
;  245          0376  2      !
;  246          0377  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_left_paren, 1)
;  247          0378  2      THEN
;  248          0379  3          BEGIN
;  249          0380  3          .message_vect =
;  250          0381  4              (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  251          0382  4               THEN
;  252          0383  4                  dbg$nmake_arg_vect (dbg$_needmore)
;  253          0384  4               ELSE
;  254          0385  5                  BEGIN
;  255          0386  5                  SIGNAL(dbg$_needparen);
;  256          0387  5                  dbg$nsyntax_error (dbg$nnext_word (.input_desc))
;  257          0388  3                  END);
;  258          0389  3          RETURN sts$k_severe;
;  259          0390  2          END;
;  260          0391  2
;  261          0392  2      ! Put a pointer to the counted string representing the THEN
;  262          0393  2      ! clause into the second noun node. (Note - the counted string
;  263          0394  2      ! is constructed out of "permanent" memory which is released
;  264          0395  2      ! in DBG$NEXECUTE_IF).
;  265          0396  2      ! (The third argument indicates that this routine is not being
;  266          0397  2      ! called during a SET BREAK DO (the behavior is slightly different
;  267          0398  2      ! in that case.))
;  268          0399  2      !
;  269          0400  2      dbg$nsave_break_buffer (.input_desc, noun_node [dbg$l_noun_value]);
;  270          0401  2
;  271          0402  2      ! If we have reached the end of the line, return success (no else
;  272          0403  2      ! clause is present).
;  273          0404  2      !
;  274          0405  2      IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  275          0406  2         OR .input_desc [dsc$w_length] EQL 0
;  276          0407  2      THEN
;  277          0408  2          RETURN sts$k_success;
;  278          0409  2
;  279          0410  2      ! Look for ELSE clause.
;  280          0411  2      !
;  281          0412  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_else, 1)
;  282          0413  2      THEN
;  283          0414  3          BEGIN
;  284          0415  3          .message_vect = dbg$nsyntax_error (dbg$nnext_word (.input_desc));
;  285          0416  3          RETURN sts$k_severe;
;  286          0417  2          END;
;  287          0418  2
```

```
;  288          0419  2     ! Allocate and link a noun node for the ELSE clause.
;  289          0420  2     !
;  290          0421  2     link = noun_node [dbg$l_noun_link];
;  291          0422  2     noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  292          0423  2     .link = .noun_node;
;  293          0424  2
;  294          0425  2     ! Eat the left parenthesis which we require be present.
;  295          0426  2     !
;  296          0427  2     IF NOT dbg$nmatch (.input_desc, dbg$cs_left_paren, 1)
;  297          0428  2     THEN
;  298          0429  3         BEGIN
;  299          0430  3         .message_vect =
;  300          0431  4             (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  301          0432  4              THEN
;  302          0433  4                 dbg$nmake_arg_vect (dbg$_needmore)
;  303          0434  4              ELSE
;  304          0435  5                 BEGIN
;  305          0436  5                 SIGNAL(dbg$_needparen);
;  306          0437  5                 dbg$nsyntax_error (dbg$nnext_word (.input_desc))
;  307          0438  5                 END);
;  308          0439  3         RETURN sts$k_severe;
;  309          0440  3         END;
;  310          0441  2
;  311          0442  2     ! Put a pointer to the counted string representing the ELSE
;  312          0443  2     ! clause into the third noun node. (Note - the counted string
;  313          0444  2     ! is constructed out of "permanent" memory which is released
;  314          0445  2     ! in DBG$NEXECUTE_IF).
;  315          0446  2     !
;  316          0447  2     dbg$nsave_break_buffer (.input_desc, noun_node [dbg$l_noun_value]);
;  317          0448  2
;  318          0449  2     ! Return success.
;  319          0450  2     !
;  320          0451  2     RETURN sts$k_success;
;  321          0452  2
;  322          0453  1     END;


                                                    .TITLE  DBGIFTHEN
                                                    .IDENT  \V04-000\

                                                    .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                        0D  01  00000 P.AAA:  .BYTE   1, 13                                             ;
                                        28  01  00002 P.AAB:  .BYTE   1, 40                                             ;
                                            04  00004 P.AAC:  .BYTE   4                                                 ;
                                    45  53  4C  45  00005     .ASCII  \ELSE\                                            ;
                                            04  00009 P.AAD:  .BYTE   4                                                 ;
                                    4E  45  48  54  0000A     .ASCII  \THEN\                                            ;

                                                    DBG$CS_CR=          P.AAA
                                                    DBG$CS_LEFT_PAREN=  P.AAB
                                                    DBG$CS_ELSE=        P.AAC
                                                    DBG$CS_THEN=        P.AAD
                                                    .EXTRN  DBG$GB_LANGUAGE
                                                    .EXTRN  DBG$GB_RADIX, DBG$GB_TAKE_CMD
                                                    .EXTRN  DBG$GL_CISHEAD, DBG$DEF_SYM_ADD
                                                    .EXTRN  DBG$GET_MEMORY, DBG$GET_TEMPMEM
```

```
                                        .EXTRN  DBG$NCIS_ADD, DBG$NGET_SYMID
                                        .EXTRN  DBG$NMAKE_ARG_VECT
                                        .EXTRN  DBG$NMATCH, DBG$NNEXT_WORD
                                        .EXTRN  DBG$NPARSE_EXPRESSION
                                        .EXTRN  DBG$NREAD_NAME, DBG$NSAVE_BREAK_BUFFER
                                        .EXTRN  DBG$NSYNTAX_ERROR
                                        .EXTRN  DBG$NTYPE_CONV, DBG$REL_MEMORY
                                        .EXTRN  DBG$STA_LOCK_SYMID

                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                          07FC 00000    .ENTRY  DBG$NPARSE_IF, Save R2,R3,R4,R5,R6,R7,R8,-      ; 0248
                                                R9,R10
                5A 00000000G   00  9E 00002    MOVAB   DBG$NSAVE_BREAK_BUFFER, R10             ;
                59 00000000G   00  9E 00009    MOVAB   LIB$SIGNAL, R9                          ;
                58 00000000G   00  9E 00010    MOVAB   DBG$GET_TEMPMEM, R8                     ;
                57 00000000G   00  9E 00017    MOVAB   DBG$NMATCH, R7                          ;
                56 00000000'   EF  9E 0001E    MOVAB   DBG$CS_CR, R6                           ;
                               04  DD 00025    PUSHL   #4                                      ; 0320
                68             01  FB 00027    CALLS   #1, DBG$GET_TEMPMEM                     ;
                55             50  D0 0002A    MOVL    R0, NOUN_NODE                           ;
                50       08    AC  D0 0002D    MOVL    VERB_NODE, R0                           ; 0321
             08 A0             55  D0 00031    MOVL    NOUN_NODE, 8(R0)                        ;
                50 00000000G   00  9A 00035    MOVZBL  DBG$GB_RADIX, RADIX                     ; 0326
                53       0C    AC  D0 0003C    MOVL    MESSAGE_VECT, R3                        ; 0334
                               53  DD 00040    PUSHL   R3                                      ;
                               06  DD 00042    PUSHL   #6                                      ; 0333
                               21  BB 00044    PUSHR   #^M<R0,R5>                              ;
                52       04    AC  D0 00046    MOVL    INPUT_DESC, R2                          ; 0332
                               52  DD 0004A    PUSHL   R2                                      ; 0333
00000000G       00             05  FB 0004C    CALLS   #5, DBG$NPARSE_EXPRESSION               ;
                54             50  D0 00053    MOVL    R0, STATUS                              ;
                01             54  D1 00056    CMPL    STATUS, #1                              ; 0343
                               09  12 00059    BNEQ    1$                                      ;
                   000280D0    8F  DD 0005B    PUSHL   #164048                                 ;
                69             01  FB 00061    CALLS   #1, LIB$SIGNAL                          ;
                04             54  D1 00064 1$: CMPL    STATUS, #4                              ; 0348
                               03  12 00067    BNEQ    2$                                      ;
                             00AE  31 00069    BRW     10$                                     ;
                               01  DD 0006C 2$: PUSHL   #1                                      ; 0355
                          09   A6  9F 0006E    PUSHAB  DBG$CS_THEN                             ;
                               52  DD 00071    PUSHL   R2                                      ;
                67             03  FB 00073    CALLS   #3, DBG$NMATCH                          ;
                0E             50  E8 00076    BLBS    R0, 3$                                  ;
                               01  DD 00079    PUSHL   #1                                      ; 0359
                        0044   8F  BB 0007B    PUSHR   #^M<R2,R6>                              ;
                67             03  FB 0007F    CALLS   #3, DBG$NMATCH                          ;
                3D             50  E9 00082    BLBC    R0, 4$                                  ;
                               66  11 00085    BRB     6$                                      ; 0361
                54       08    A5  9E 00087 3$: MOVAB   8(R5), LINK                            ; 0371
                               04  DD 0008B    PUSHL   #4                                      ; 0372
                68             01  FB 0008D    CALLS   #1, DBG$GET_TEMPMEM                     ;
                55             50  D0 00090    MOVL    R0, NOUN_NODE                           ;
                64             55  D0 00093    MOVL    NOUN_NODE, (LINK)                       ; 0373
                               01  DD 00096    PUSHL   #1                                      ; 0377
                          02   A6  9F 00098    PUSHAB  DBG$CS_LEFT_PAREN                       ;
                               52  DD 0009B    PUSHL   R2                                      ;
```

```
                67               03  FB 0009D              CALLS   #3, DBG$NMATCH                                  ;
                3E               50  E9 000A0              BLBC    R0, 5$                                          ;
                                 24  BB 000A3              PUSHR   #^M<R2,R5>                                      ; 0400
                6A               02  FB 000A5              CALLS   #2, DBG$NSAVE_BREAK_BUFFER                      ;
                                 01  DD 000A8              PUSHL   #1                                              ; 0405
                         0044    8F  BB 000AA              PUSHR   #^M<R2,R6>                                      ;
                67               03  FB 000AE              CALLS   #3, DBG$NMATCH                                  ;
                6F               50  E8 000B1              BLBS    R0, 12$                                         ;
                                 62  B5 000B4              TSTW    (R2)                                            ; 0406
                                 6B  13 000B6              BEQL    12$                                             ;
                                 01  DD 000B8              PUSHL   #1                                              ; 0412
                         04      A6  9F 000BA              PUSHAB  DBG$CS_ELSE                                     ;
                                 52  DD 000BD              PUSHL   R2                                              ;
                67               03  FB 000BF              CALLS   #3, DBG$NMATCH                                  ;
                40               50  E9 000C2  4$:         BLBC    R0, 8$                                          ;
                54       08      A5  9E 000C5              MOVAB   8(R5), LINK                                     ; 0421
                                 04  DD 000C9              PUSHL   #4                                              ; 0422
                68               01  FB 000CB              CALLS   #1, DBG$GET_TEMPMEM                             ;
                55               50  D0 000CE              MOVL    R0, NOUN_NODE                                   ;
                64               55  D0 000D1              MOVL    NOUN_NODE, (LINK)                               ; 0423
                                 01  DD 000D4              PUSHL   #1                                              ; 0427
                         02      A6  9F 000D6              PUSHAB  DBG$CS_LEFT_PAREN                               ;
                                 52  DD 000D9              PUSHL   R2                                              ;
                67               03  FB 000DB              CALLS   #3, DBG$NMATCH                                  ;
                3D               50  E8 000DE              BLBS    R0, 11$                                         ;
                                 01  DD 000E1  5$:         PUSHL   #1                                              ; 0431
                         0044    8F  BB 000E3              PUSHR   #^M<R2,R6>                                      ;
                67               03  FB 000E7              CALLS   #3, DBG$NMATCH                                  ;
                0F               50  E9 000EA              BLBC    R0, 7$                                          ;
                    000280D0     8F  DD 000ED  6$:         PUSHL   #164048                                         ; 0433
00000000G       00               01  FB 000F3              CALLS   #1, DBG$NMAKE_ARG_VECT                          ;
                                 1B  11 000FA              BRB     9$                                              ;
                    00028743     8F  DD 000FC  7$:         PUSHL   #165699                                         ; 0436
                69               01  FB 00102              CALLS   #1, LIB$SIGNAL                                  ;
                                 52  DD 00105  8$:         PUSHL   R2                                              ; 0437
00000000G       00               01  FB 00107              CALLS   #1, DBG$NNEXT_WORD                              ;
                                 50  DD 0010E              PUSHL   R0                                              ;
00000000G       00               01  FB 00110              CALLS   #1, DBG$NSYNTAX_ERROR                           ;
                63               50  D0 00117  9$:         MOVL    R0, (R3)                                        ; 0431
                50               04  D0 0011A  10$:        MOVL    #4, R0                                          ; 0439
                                 04  0011D                 RET                                                     ;
                                 24  BB 0011E  11$:        PUSHR   #^M<R2,R5>                                      ; 0447
                6A               02  FB 00120              CALLS   #2, DBG$NSAVE_BREAK_BUFFER                      ;
                50               01  D0 00123  12$:        MOVL    #1, R0                                          ; 0451
                                 04  00126                 RET                                                     ; 0453

; Routine Size:  295 bytes,    Routine Base:  DBG$CODE + 0000
```

```
;   324     0454  1 GLOBAL ROUTINE dbg$nexecute_if (verb_node,message_vect) =
;   325     0455  1 !++
;   326     0456  1 ! Functional Description
;   327     0457  1 !
;   328     0458  1 !       This routine performs the action associated with the IF
;   329     0459  1 !       command.
;   330     0460  1 !
;   331     0461  1 ! Formal Parameters
;   332     0462  1 !
;   333     0463  1 !       verb_node       - A longword containing the address of the
;   334     0464  1 !                         head (verb) node.
;   335     0465  1 !       message_vect    - The address of a longword to contain the
;   336     0466  1 !                         address of an error message vector
;   337     0467  1 !
;   338     0468  1 ! Implicit Inputs
;   339     0469  1 !
;   340     0470  1 !       The command tree contains a verb node and a linked list
;   341     0471  1 !       of two or three noun nodes. (See the diagram in the header for
;   342     0472  1 !       DBG$NPARSE_IF).
;   343     0473  1 !
;   344     0474  1 ! Routine Value
;   345     0475  1 !
;   346     0476  1 !       A completion code.
;   347     0477  1 !
;   348     0478  1 ! Completion Codes
;   349     0479  1 !
;   350     0480  1 !       sts$k_success (1)       - Success. Command executed
;   351     0481  1 !       sts$k_severe (4)        - Failure. The command could not be
;   352     0482  1 !                                 executed. An error message is constructed.
;   353     0483  1 !
;   354     0484  1 ! Side Effects
;   355     0485  1 !
;   356     0486  1 !       Storage allocated for the THEN clause is freed up.
;   357     0487  1 !--
;   358     0488  2     BEGIN
;   359     0489  2
;   360     0490  2     MAP
;   361     0491  2         verb_node : REF dbg$verb_node;
;   362     0492  2
;   363     0493  2     LOCAL
;   364     0494  2         condition_node: REF dbg$noun_node,       ! The noun node for the IF condition
;   365     0495  2         condition_value,                        ! Should be TRUE or FALSE
;   366     0496  2         else_node: REF dbg$noun_node,           ! The noun node for the ELSE clause.
;   367     0497  2         else_string: REF VECTOR[,WORD],         ! Counted string with the ELSE clause
;   368     0498  2         then_node:      REF dbg$noun_node,      ! The noun node for the THEN clause
;   369     0499  2         then_string:    REF VECTOR[,WORD],      ! Counted string with the THEN clause
;   370     0500  2         vax_desc:       dbg$stg_desc;           ! Target of the conversion from
;   371     0501  2                                                 !    the value descriptor
;   372     0502  2                                                 !    representing the condition.
;   373     0503  2
;   374     0504  2     ! Recover the two noun nodes.
;   375     0505  2     !
;   376     0506  2     condition_node = .verb_node [dbg$l_verb_object_ptr];
;   377     0507  2     then_node = .condition_node [dbg$l_noun_link];
;   378     0508  2     else_node = .then_node [dbg$l_noun_link];
;   379     0509  2
;   380     0510  2     ! Set up the vax descriptor for the condition.
```

```
;  381     0511  2     ! *** For now, we just declare the descriptor to be longword integer,
;  382     0512  2     ! since this causes the fewest problems in the type converter.
;  383     0513  2     ! Eventually, if we get a Boolean type and all languages support
;  384     0514  2     ! it then we will build a target descriptor of this type.
;  385     0515  2     !
;  386     0516  2     vax_desc [dsc$b_class] = dsc$k_class_s;
;  387     0517  2     vax_desc [dsc$b_dtype] = dsc$k_dtype_l;
;  388     0518  2     vax_desc [dsc$w_length] = 4;
;  389     0519  2     vax_desc [dsc$a_pointer] = condition_value;
;  390     0520  2     vax_desc [dsc$l_pos] = 0;
;  391     0521  2
;  392     0522  2     ! *** Special case for PASCAL. Level 3 PASCAL returns descriptors
;  393     0523  2     ! of type Boolean (dsc$k_dtype_tf) for relational expressions.
;  394     0524  2     !
;  395     0525  2     IF .dbg$gb_language EQL dbg$k_pascal
;  396     0526  2     THEN
;  397     0527  2         BEGIN
;  398     0528  2         vax_desc [dsc$b_dtype] = dsc$k_dtype_tf;
;  399     0529  2         vax_desc [dsc$w_length] = 1;
;  400     0530  2         END;
;  401     0531  2
;  402     0532  2     ! Initialize condition_value to 0
;  403     0533  2     !
;  404     0534  2     condition_value = 0;
;  405     0535  2
;  406     0536  2     ! Do the conversion from value descriptor to integer.
;  407     0537  2     !
;  408     0538  2     IF NOT dbg$ntype_conv (.condition_node [dbg$l_noun_value],
;  409     0539  2                            dbg$k_default,
;  410     0540  2                            dbg$k_vax_desc,
;  411     0541  2                            vax_desc,
;  412     0542  2                            .message_vect)
;  413     0543  2     THEN
;  414     0544  2         RETURN sts$k_severe;
;  415     0545  2
;  416     0546  2     ! Recover the string(s).
;  417     0547  2     !
;  418     0548  2     then_string = .then_node [dbg$l_noun_value];
;  419     0549  2     IF .else_node NEQ 0
;  420     0550  2     THEN
;  421     0551  2         else_string = .else_node [dbg$l_noun_value]
;  422     0552  2     ELSE
;  423     0553  2         else_string = 0;
;  424     0554  2
;  425     0555  2     ! Process the THEN clause only if value of the condition is TRUE.
;  426     0556  2     ! For now, just use the BLISS semantics which say that a value is
;  427     0557  2     ! true iff the low bit is 1. We need to research which languages
;  428     0558  2     ! have different semantics and come up with a language-dependent
;  429     0559  2     ! method of doing this.
;  430     0560  2     !
;  431     0561  2     IF .condition_value
;  432     0562  2     THEN
;  433     0563  3         BEGIN
;  434     0564  3
;  435     0565  3         ! Add a new link to the command input stream.
;  436     0566  3         !
;  437     0567  3         IF NOT dbg$ncis_add (then_string[1], .then_string[0],
```

```
;  438     0568  3                                cis_if, 0, 0, 0, .message_vect)
;  439     0569  3          THEN
;  440     0570  3              RETURN sts$k_severe;
;  441     0571  3
;  442     0572  3          END
;  443     0573  3
;  444     0574  2      ELSE ! Process the ELSE clause
;  445     0575  2
;  446     0576  2          IF .else_string NEQ 0
;  447     0577  2          THEN
;  448     0578  2              BEGIN
;  449     0579  2
;  450     0580  2              ! Add a new link to the command input stream.
;  451     0581  2              !
;  452     0582  2              IF NOT dbg$ncis_add (else_string[1], .else_string[0],
;  453     0583  2                                   cis_if, 0, 0, 0, .message_vect)
;  454     0584  2              THEN
;  455     0585  2                  RETURN sts$k_severe;
;  456     0586  2
;  457     0587  2              END;
;  458     0588  2
;  459     0589  2      ! Return success.
;  460     0590  2      !
;  461     0591  2      RETURN sts$k_success;
;  462     0592  2
;  463     0593  1      END; ! dbg$nexecute_if


                    000C 00000          .ENTRY  DBG$NEXECUTE_IF, Save R2,R3                     ; 0454
                 5E 10  C2 00002        SUBL2   #16, SP
                 50 04  AC  D0 00005    MOVL    VERB_NODE, R0                                  ; 0506
                 50 08  A0  D0 00009    MOVL    8(R0), CONDITION_NODE
                 52 08  A0  D0 0000D    MOVL    8(CONDITION_NODE), THEN_NODE                   ; 0507
                 53 08  A2  D0 00011    MOVL    8(THEN_NODE), ELSE_NODE                        ; 0508
     04 AE 01080004     8F  D0 00015    MOVL    #17301508, VAX_DESC                            ; 0518
     08 AE              6E  9E 0001D    MOVAB   CONDITION_VALUE, VAX_DESC+4                    ; 0519
           0C AE        D4  00021       CLRL    VAX_DESC+8                                     ; 0520
        06 00000000G 00  91  00024      CMPB    DBG$GB_LANGUAGE, #6                            ; 0525
                     08  12  0002B      BNEQ    1$
     06 AE              28  90 0002D    MOVB    #40, VAX_DESC+2                                ; 0528
     04 AE              01  B0 00031    MOVW    #1, VAX_DESC                                   ; 0529
                        6E  D4 00035 1$:        CLRL    CONDITION_VALUE                        ; 0534
              08 AC     DD  00037       PUSHL   MESSAGE_VECT                                   ; 0542
              08 AE     9F  0003A       PUSHAB  VAX_DESC                                       ; 0538
           7E 82        8F  9A 0003D    MOVZBL  #130, -(SP)
                        01  DD 00041    PUSHL   #1
                        60  DD 00043    PUSHL   (CONDITION_NODE)
00000000G 00                05  FB 00045    CALLS   #5, DBG$NTYPE_CONV
           3B               50  E9 0004C    BLBC    R0, 6$
           50               62  D0 0004F    MOVL    (THEN_NODE), THEN_STRING                   ; 0548
                            53  D5 00052    TSTL    ELSE_NODE                                  ; 0549
                            05  13 00054    BEQL    2$
           52               63  D0 00056    MOVL    (ELSE_NODE), ELSE_STRING                   ; 0551
                            02  11 00059    BRB     3$
```

```
                                52  D4 0005B 2$:    CLRL    ELSE_STRING                             ; 0553
                            10  6E  E9 0005D 3$:    BLBC    CONDITION_VALUE, 4$                     ; 0561
                        08      AC  DD 00060        PUSHL   MESSAGE_VECT                            ; 0568
                                7E  7C 00063        CLRQ    -(SP)                                   ; 0567
                            7E      06  7D 00065    MOVQ    #6, -(SP)                               ;
                            7E      60  3C 00068    MOVZWL  (THEN_STRING), -(SP)                    ;
                        02          A0  9F 0006B    PUSHAB  2(THEN_STRING)                          ;
                                    10  11 0006E    BRB     5$                                      ;
                                    1C  13 00070 4$:    BEQL    7$                                  ; 0576
                        08          AC  DD 00072    PUSHL   MESSAGE_VECT                            ; 0583
                                    7E  7C 00075    CLRQ    -(SP)                                   ; 0582
                            7E          06  7D 00077    MOVQ    #6, -(SP)                           ;
                            7E          62  3C 0007A    MOVZWL  (ELSE_STRING), -(SP)                ;
                        02              A2  9F 0007D    PUSHAB  2(ELSE_STRING)                      ;
00000000G               00              07  FB 00080 5$:    CALLS   #7, DBG$NCIS_ADD                ;
                        04              50  E8 00087    BLBS    R0, 7$                              ;
                        50              04  D0 0008A 6$:    MOVL    #4, R0                          ; 0585
                                        04  0008D        RET                                     ;
                        50              01  D0 0008E 7$:    MOVL    #1, R0                          ; 0591
                                        04  00091        RET                                     ; 0593

; Routine Size:  146 bytes,    Routine Base:  DBG$CODE + 0127
```

```
;  465     0594  1 GLOBAL ROUTINE dbg$nparse_while(input_desc, verb_node, message_vect) =
;  466     0595  1 !
;  467     0596  1 ! Functional Description
;  468     0597  1 !
;  469     0598  1 !       ATN parse network for the WHILE verb.
;  470     0599  1 !       This routine takes a verb node for the WHILE verb, and a string
;  471     0600  1 !       descriptor for the remaining (unparsed) input.
;  472     0601  1 !       A command execution tree is built. The form of the tree is:
;  473     0602  1 !
;  474     0603  1 !        -----------       -----------       -----------
;  475     0604  1 !       ! verb node !-->--! noun node !-->--! noun node !
;  476     0605  1 !        -----------       -----------       -----------
;  477     0606  1 !
;  478     0607  1 !       The first noun node points to a value descriptor for the condition.
;  479     0608  1 !       The second noun node points to a counted string with the DO clause.
;  480     0609  1 !
;  481     0610  1 ! Formal Parameters
;  482     0611  1 !
;  483     0612  1 !       input_desc      - A longword containing the address of the
;  484     0613  1 !                         command input descriptor.
;  485     0614  1 !       verb_node       - A longword containing the address of the verb node.
;  486     0615  1 !       message_vect    - The address of a longword to contain the address
;  487     0616  1 !                         of a standard message argument vector.
;  488     0617  1 !
;  489     0618  1 ! Implicit Inputs
;  490     0619  1 !
;  491     0620  1 !       none
;  492     0621  1 !
;  493     0622  1 ! Implicit Outputs
;  494     0623  1 !
;  495     0624  1 !       On success, the command execution tree is constructed.
;  496     0625  1 !       On failure, a message argument vector is constructed or obtained.
;  497     0626  1 !
;  498     0627  1 ! Routine value
;  499     0628  1 !
;  500     0629  1 !       sts$k_success (1)       - Success. Command execution tree constructed.
;  501     0630  1 !       sts$k_severe  (4)       - Failure. Error encountered. Message argument
;  502     0631  1 !                                 constructed and returned.
;  503     0632  1 !
;  504     0633  1 ! Side Effects
;  505     0634  1 !
;  506     0635  1 !       Permanent storage is allocated for the string holding the DO clause;
;  507     0636  1 !       this is released in DBG$NEXECUTE_WHILE after execution.
;  508     0637  1 !
;  509     0638  1
;  510     0639  2     BEGIN
;  511     0640  2
;  512     0641  2     MAP
;  513     0642  2         input_desc: REF dbg$stg_desc,
;  514     0643  2         verb_node: REF dbg$verb_node;
;  515     0644  2
;  516     0645  2     BIND
;  517     0646  2         dbg$cs_cr                   = UPLIT BYTE (1, dbg$k_car_return),
;  518     0647  2         dbg$cs_left_paren           = UPLIT BYTE (1, dbg$k_left_parenthesis),
;  519     0648  2         dbg$cs_do                   = UPLIT BYTE (4, 'DO');
;  520     0649  2
;  521     0650  2     LOCAL
```

```
;  522          0651  2          link,                               ! Temporary to hold links in the command
;  523          0652  2                                              !    execution tree.
;  524          0653  2          noun_node : REF dbg$noun_node,      ! A node in the command execution tree.
;  525          0654  2          radix,                              ! Holds the current radix setting.
;  526          0655  2          status;                             ! Return status from subroutine calls.
;  527          0656  2
;  528          0657  2
;  529          0658  2
;  530          0659  2      ! Create and link a noun node
;  531          0660  2      !
;  532          0661  2      noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  533          0662  2      verb_node[dbg$l_verb_object_ptr] = .noun_node;
;  534          0663  2
;  535          0664  2      ! Determine the current radix.
;  536          0665  2      !
;  537          0666  2      radix = .dbg$gb_radix[dbg$b_radix_input];
;  538          0667  2
;  539          0668  2
;  540          0669  2      ! Obtain a value descriptor for the condition. The first noun node
;  541          0670  2      ! points to this value descriptor.
;  542          0671  2      !
;  543          0672  2      STATUS = DBG$NPARSE_EXPRESSION(.INPUT_DESC, .RADIX,
;  544          0673  2                          NOUN_NODE [DBG$L_NOUN_VALUE],
;  545          0674  2                          TOKEN$K_TERM_DO, .MESSAGE_VECT);
;  546          0675  2
;  547          0676  2
;  548          0677  2      ! The return status should be "warning", meaning that an expression
;  549          0678  2      ! was parsed and further input remains. If an expression was parsed
;  550          0679  2      ! and no input remains, NPARSE_EXPRESSION will return "success".
;  551          0680  2      ! In this context, it is an error since "WHILE exp" by itself
;  552          0681  2      ! is an error.
;  553          0682  2      !
;  554          0683  2      IF .status EQL sts$k_success
;  555          0684  2      THEN
;  556          0685  3          BEGIN
;  557          0686  3          .message_vect = dbg$nmake_arg_vect (dbg$_needmore);
;  558          0687  3          RETURN sts$k_severe;
;  559          0688  2          END;
;  560          0689  2
;  561          0690  2      ! Severe status is also an error.
;  562          0691  2      !
;  563          0692  2      IF .status EQL sts$k_severe
;  564          0693  2      THEN
;  565          0694  2          RETURN sts$k_severe;
;  566          0695  2
;  567          0696  2      ! Eat the DO
;  568          0697  2      !
;  569          0698  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_do, 1)
;  570          0699  2      THEN
;  571          0700  3          BEGIN
;  572          0701  3          .message_vect =
;  573          0702  4              (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  574          0703  4                  OR .input_desc [dsc$w_length] EQL 0
;  575          0704  4               THEN
;  576          0705  4                  dbg$nmake_arg_vect (dbg$_needmore)
;  577          0706  4               ELSE
;  578          0707  3                  dbg$nsyntax_error (dbg$nnext_word (.input_desc)));
```

```
;  579          0708  3          RETURN sts$k_severe;
;  580          0709  2          END;
;  581          0710  2
;  582          0711  2      ! Allocate and link a noun node for the DO clause.
;  583          0712  2      !
;  584          0713  2      link = noun_node [dbg$l_noun_link];
;  585          0714  2      noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  586          0715  2      .link = .noun_node;
;  587          0716  2
;  588          0717  2      ! Eat the left parenthesis which we require be present.
;  589          0718  2      !
;  590          0719  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_left_paren, 1)
;  591          0720  2      THEN
;  592          0721  3          BEGIN
;  593          0722  3          .message_vect =
;  594          0723  4              (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  595          0724  4               THEN
;  596          0725  4                   dbg$nmake_arg_vect (dbg$_needmore)
;  597          0726  4               ELSE
;  598          0727  5                   BEGIN
;  599          0728  5                   SIGNAL(dbg$_needparen);
;  600          0729  5                   dbg$nsyntax_error (dbg$nnext_word (.input_desc))
;  601          0730  5                   END);
;  602          0731  3          RETURN sts$k_severe;
;  603          0732  3          END;
;  604          0733  2
;  605          0734  2      ! Put a pointer to the counted string representing the DO
;  606          0735  2      ! clause into the second noun node. (Note - the counted string
;  607          0736  2      ! is constructed out of "permanent" memory which is released
;  608          0737  2      ! in DBG$NEXECUTE_IF).
;  609          0738  2      !
;  610          0739  2      dbg$nsave_break_buffer (.input_desc, noun_node [dbg$l_noun_value]);
;  611          0740  2
;  612          0741  2      ! Return success.
;  613          0742  2      !
;  614          0743  2      RETURN sts$k_success;
;  615          0744  2
;  616          0745  1      END;


                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                0D  01  0000E P.AAE:    .BYTE   1, 13                                   ;
                                28  01  00010 P.AAF:    .BYTE   1, 40                                   ;
                                    04  00012 P.AAG:    .BYTE   4                                       ;
                                4F  44  00013           .ASCII  \DO\                                    ;

                                                DBG$CS_CR=              P.AAE
                                                DBG$CS_LEFT_PAREN=      P.AAF
                                                DBG$CS_DO=              P.AAG


                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                    00FC 00000          .ENTRY  DBG$NPARSE_WHILE, Save R2,R3,R4,R5,R6,R7    ; 0594
                    57 00000000G    00   9E 00002        MOVAB   DBG$GET_TEMPMEM, R7                         ;
```

```
                        56 00000000G   00   9E 00009          MOVAB   DBG$NMATCH, R6                                ;
                        55 00000000'   EF   9E 00010          MOVAB   DBG$CS_CR, R5                                ;
                                       04   DD 00017          PUSHL   #4                                           ;
                        67             01   FB 00019          CALLS   #1, DBG$GET_TEMPMEM                          ; 0661
                        54             50   D0 0001C          MOVL    R0, NOUN_NODE                                ;
                        50       08    AC   D0 0001F          MOVL    VERB_NODE, R0                                ; 0662
                  08    A0             54   D0 00023          MOVL    NOUN_NODE, 8(R0)                             ;
                        50 00000000G   00   9A 00027          MOVZBL  DBG$GB_RADIX, RADIX                          ; 0666
                                 0C    AC   DD 0002E          PUSHL   MESSAGE_VECT                                 ; 0674
                                       05   DD 00031          PUSHL   #5                                           ; 0673
                                       11   BB 00033          PUSHR   #^M<R0,R4>                                   ;
                        52       04    AC   D0 00035          MOVL    INPUT_DESC, R2                               ; 0672
                                       52   DD 00039          PUSHL   R2                                           ; 0673
          00000000G     00             05   FB 0003B          CALLS   #5, DBG$NPARSE_EXPRESSION                    ;
                        53             50   D0 00042          MOVL    R0, STATUS                                   ;
                        01             53   D1 00045          CMPL    STATUS, #1                                   ; 0683
                                       48   13 00048          BEQL    2$                                           ;
                        04             53   D1 0004A          CMPL    STATUS, #4                                   ; 0692
                                       75   13 0004D          BEQL    6$                                           ;
                                       01   DD 0004F          PUSHL   #1                                           ; 0698
                                 04    A5   9F 00051          PUSHAB  DBG$CS_DO                                    ;
                                       52   DD 00054          PUSHL   R2                                           ;
                        66             03   FB 00056          CALLS   #3, DBG$NMATCH                               ;
                        10             50   E8 00059          BLBS    R0, 1$                                       ;
                                       01   DD 0005C          PUSHL   #1                                           ; 0702
                                       24   BB 0005E          PUSHR   #^M<R2,R5>                                   ;
                        66             03   FB 00060          CALLS   #3, DBG$NMATCH                               ;
                        2C             50   E8 00063          BLBS    R0, 2$                                       ;
                                       62   B5 00066          TSTW    (R2)                                         ; 0703
                                       44   12 00068          BNEQ    4$                                           ;
                                       26   11 0006A          BRB     2$                                           ; 0705
                        53       08    A4   9E 0006C  1$:      MOVAB   8(R4), LINK                                  ; 0713
                                       04   DD 00070          PUSHL   #4                                           ; 0714
                        67             01   FB 00072          CALLS   #1, DBG$GET_TEMPMEM                          ;
                        54             50   D0 00075          MOVL    R0, NOUN_NODE                                ;
                        63             54   D0 00078          MOVL    NOUN_NODE, (LINK)                            ; 0715
                                       01   DD 0007B          PUSHL   #1                                           ; 0719
                                 02    A5   9F 0007D          PUSHAB  DBG$CS_LEFT_PAREN                            ;
                                       52   DD 00080          PUSHL   R2                                           ;
                        66             03   FB 00082          CALLS   #3, DBG$NMATCH                               ;
                        40             50   E8 00085          BLBS    R0, 7$                                       ;
                                       01   DD 00088          PUSHL   #1                                           ; 0723
                                       24   BB 0008A          PUSHR   #^M<R2,R5>                                   ;
                        66             03   FB 0008C          CALLS   #3, DBG$NMATCH                               ;
                        0F             50   E9 0008F          BLBC    R0, 3$                                       ;
                             00028DD0  8F   DD 00092  2$:      PUSHL   #164048                                      ; 0725
          00000000G     00             01   FB 00098          CALLS   #1, DBG$NMAKE_ARG_VECT                       ;
                                       1F   11 0009F          BRB     5$                                           ;
                             00028743  8F   DD 000A1  3$:      PUSHL   #165699                                      ; 0728
          00000000G     00             01   FB 000A7          CALLS   #1, LIB$SIGNAL                               ;
                                       52   DD 000AE  4$:      PUSHL   R2                                           ; 0729
          00000000G     00             01   FB 000B0          CALLS   #1, DBG$NNEXT_WORD                           ;
                                       50   DD 000B7          PUSHL   R0                                           ;
          00000000G     00             01   FB 000B9          CALLS   #1, DBG$NSYNTAX_ERROR                        ;
                  0C    BC             50   D0 000C0  5$:      MOVL    R0, @MESSAGE_VECT                            ; 0723
                        50             04   D0 000C4  6$:      MOVL    #4, R0                                       ; 0731
                                       04   000C7              RET                                                  ;
```

```
                                    14  BB 000C8 7$:    PUSHR   #^M<R2,R4>                                      ; 0739
                                    02  FB 000CA        CALLS   #2, DBG$NSAVE_BREAK_BUFFER                      ;
                00000000G     00    01  D0 000D1        MOVL    #1, R0                                          ; 0743
                              50        04 000D4        RET                                                     ; 0745

; Routine Size:  213 bytes,    Routine Base:  DBG$CODE + 01B9
```

```
;  618     0746  1 GLOBAL ROUTINE dbg$nexecute_while (verb_node,message_vect) =
;  619     0747  1 !++
;  620     0748  1 ! Functional Description
;  621     0749  1 !
;  622     0750  1 !       This routine performs the action associated with the WHILE
;  623     0751  1 !       command.
;  624     0752  1 !
;  625     0753  1 ! Formal Parameters
;  626     0754  1 !
;  627     0755  1 !       verb_node       - A longword containing the address of the
;  628     0756  1 !                         head (verb) node.
;  629     0757  1 !       message_vect    - The address of a longword to contain the
;  630     0758  1 !                         address of an error message vector
;  631     0759  1 !
;  632     0760  1 ! Implicit Inputs
;  633     0761  1 !
;  634     0762  1 !       The command tree contains a verb node and a linked list
;  635     0763  1 !       of two noun nodes. (See the diagram in the header for
;  636     0764  1 !       DBG$NPARSE_WHILE).
;  637     0765  1 !
;  638     0766  1 ! Routine Value
;  639     0767  1 !
;  640     0768  1 !       A completion code.
;  641     0769  1 !
;  642     0770  1 ! Completion Codes
;  643     0771  1 !
;  644     0772  1 !       sts$k_success (1)       - Success. Command executed
;  645     0773  1 !       sts$k_severe (4)        - Failure. The command could not be
;  646     0774  1 !                                 executed. An error message is constructed.
;  647     0775  1 !
;  648     0776  1 ! Side Effects
;  649     0777  1 !
;  650     0778  1 !       None
;  651     0779  1 !--
;  652     0780  2     BEGIN
;  653     0781  2
;  654     0782  2     MAP
;  655     0783  2         verb_node : REF dbg$verb_node;
;  656     0784  2
;  657     0785  2     LOCAL
;  658     0786  2         condition_node: REF dbg$noun_node,       ! The noun node for the IF condition
;  659     0787  2         condition_value,                        ! Should be TRUE or FALSE
;  660     0788  2         do_node:        REF dbg$noun_node,      ! The noun node for the THEN clause
;  661     0789  2         do_string: REF VECTOR[,WORD],           ! Counted string for the do clause
;  662     0790  2         vax_desc:  dbg$stg_desc;                ! Target of the conversion from
;  663     0791  2                                                 !       the value descriptor.
;  664     0792  2
;  665     0793  2
;  666     0794  2     ! Recover the two noun nodes.
;  667     0795  2     !
;  668     0796  2     condition_node = .verb_node [dbg$l_verb_object_ptr];
;  669     0797  2     do_node = .condition_node [dbg$l_noun_link];
;  670     0798  2
;  671     0799  2     ! Set up the vax descriptor for the condition.
;  672     0800  2     !
;  673     0801  2     vax_desc [dsc$b_class] = dsc$k_class_s;
;  674     0802  2     vax_desc [dsc$b_dtype] = dsc$k_dtype_l;
```

```
;  675     0803  2     vax_desc [dsc$w_length] = 4;
;  676     0804  2     vax_desc [dsc$a_pointer] = condition_value;
;  677     0805  2     vax_desc [dsc$l_pos] = 0;
;  678     0806  2
;  679     0807  2     ! Special case for level 3 PASCAL. PASCAL returns descriptors
;  680     0808  2     ! of type boolean (dsc$k_dtype_tf) for relational expressions.
;  681     0809  2     !
;  682     0810  2     IF .dbg$gb_language EQL dbg$k_pascal
;  683     0811  2     THEN
;  684     0812  2         BEGIN
;  685     0813  2         vax_desc [dsc$b_dtype] = dsc$k_dtype_tf;
;  686     0814  2         vax_desc [dsc$w_length] = 1;
;  687     0815  2         END;
;  688     0816  2
;  689     0817  2     ! Initialize condition_value to zero.
;  690     0818  2     !
;  691     0819  2     condition_value = 0;
;  692     0820  2
;  693     0821  2     ! Do the conversion from value descriptor to integer.
;  694     0822  2     !
;  695     0823  2     IF NOT dbg$ntype_conv (.condition_node [dbg$l_noun_value],
;  696     0824  2                            dbg$k_default,
;  697     0825  2                            dbg$k_vax_desc,
;  698     0826  2                            vax_desc,
;  699     0827  2                            .message_vect)
;  700     0828  2     THEN
;  701     0829  2         RETURN sts$k_severe;
;  702     0830  2
;  703     0831  2     ! Continue only of condition is true. For now, just use BLISS semantics.
;  704     0832  2     !
;  705     0833  2     IF .condition_value
;  706     0834  2     THEN
;  707     0835  2         BEGIN
;  708     0836  2
;  709     0837  2         ! Recover the do string.
;  710     0838  2         !
;  711     0839  2         do_string = .do_node [dbg$l_noun_value];
;  712     0840  2
;  713     0841  2         ! Add a link to the command input stream
;  714     0842  2         !
;  715     0843  2         IF NOT dbg$ncis_add (do_string[1], .do_string[0], cis_while,
;  716     0844  2                 0, TRUE, 0, .message_vect)
;  717     0845  2         THEN
;  718     0846  2             RETURN sts$k_severe;
;  719     0847  2
;  720     0848  2         END
;  721     0849  2
;  722     0850  2     ELSE
;  723     0851  2         ! Add a cis for null action
;  724     0852  2         !
;  725     0853  2         BEGIN
;  726     0854  2         LOCAL
;  727     0855  2             dummy: REF VECTOR[,WORD];
;  728     0856  2         dummy = dbg$get_memory (1);
;  729     0857  2         IF NOT dbg$ncis_add (dummy[1], 0, cis_while, 0, FALSE, 0, .message_vect)
;  730     0858  2         THEN
;  731     0859  3             RETURN sts$k_severe;
```

```
;  732          0860  2          END;
;  733          0861  2
;  734          0862  2      ! Return success.
;  735          0863  2      !
;  736          0864  2      RETURN sts$k_success;
;  737          0865  2
;  738          0866  1      END; ! dbg$nexecute_while


                                                0004 00000          .ENTRY  DBG$NEXECUTE_WHILE, Save R2                     ; 0746
                                     5E          10   C2 00002          SUBL2   #16, SP                                         ;
                                     50      04  AC   D0 00005          MOVL    VERB_NODE, R0                                   ; 0796
                                     50      08  A0   D0 00009          MOVL    8(R0), CONDITION_NODE                           ;
                                     52      08  A0   D0 0000D          MOVL    8(CONDITION_NODE), DO_NODE                      ; 0797
                                04   AE 01080004  8F   D0 00011          MOVL    #17301508, VAX_DESC                             ; 0803
                                08   AE          6E   9E 00019          MOVAB   CONDITION_VALUE, VAX_DESC+4                     ; 0804
                                         0C      AE   D4 0001D          CLRL    VAX_DESC+8                                      ; 0805
                                    06 00000000G 00   91 00020          CMPB    DBG$GB_LANGUAGE, #6                             ; 0810
                                                 08   12 00027          BNEQ    1$                                              ;
                                06   AE          28   90 00029          MOVB    #40, VAX_DESC+2                                 ; 0813
                                04   AE          01   B0 0002D          MOVW    #1, VAX_DESC                                    ; 0814
                                                 6E   D4 00031  1$:      CLRL    CONDITION_VALUE                                 ; 0819
                                         08      AC   DD 00033          PUSHL   MESSAGE_VECT                                    ; 0827
                                         08      AE   9F 00036          PUSHAB  VAX_DESC                                        ; 0823
                                     7E      82  8F   9A 00039          MOVZBL  #130, -(SP)                                     ;
                                                 01   DD 0003D          PUSHL   #1                                              ;
                                                 60   DD 0003F          PUSHL   (CONDITION_NODE)                                ;
                            00000000G    00      05   FB 00041          CALLS   #5, DBG$NTYPE_CONV                              ;
                                         34      50   E9 00048          BLBC    R0, 4$                                          ;
                                         11      6E   E9 0004B          BLBC    CONDITION_VALUE, 2$                             ; 0833
                                         50      62   D0 0004E          MOVL    (DO_NODE), DO_STRING                            ; 0839
                                             08  AC   DD 00051          PUSHL   MESSAGE_VECT                                    ; 0844
                                     7E          01   7D 00054          MOVQ    #1, -(SP)                                       ; 0843
                                     7E          05   7D 00057          MOVQ    #5, -(SP)                                       ;
                                     7E          60   3C 0005A          MOVZWL  (DO_STRING), -(SP)                              ;
                                                 13   11 0005D          BRB     3$                                              ;
                                                 01   DD 0005F  2$:      PUSHL   #1                                              ; 0856
                            00000000G    00      01   FB 00061          CALLS   #1, DBG$GET_MEMORY                              ;
                                             08  AC   DD 00068          PUSHL   MESSAGE_VECT                                    ; 0857
                                                 7E   7C 0006B          CLRQ    -(SP)                                           ;
                                         7E      05   7D 0006D          MOVQ    #5, -(SP)                                       ;
                                                 7E   D4 00070          CLRL    -(SP)                                           ;
                                             02  A0   9F 00072  3$:      PUSHAB  2(DUMMY)                                        ;
                            00000000G    00      07   FB 00075          CALLS   #7, DBG$NCIS_ADD                                ;
                                         04      50   E8 0007C          BLBS    R0, 5$                                          ;
                                         50      04   D0 0007F  4$:      MOVL    #4, R0                                          ; 0859
                                                 04   00082              RET                                                     ;
                                         50      01   D0 00083  5$:      MOVL    #1, R0                                          ; 0864
                                                 04   00086              RET                                                     ; 0866

; Routine Size:  135 bytes,    Routine Base:  DBG$CODE + 028E
```

```
;  740     0867  1 GLOBAL ROUTINE dbg$nparse_for (input_desc, verb_node, message_vect) =
;  741     0868  1 !
;  742     0869  1 ! Functional Description
;  743     0870  1 !
;  744     0871  1 !       ATN parse network for the FOR verb.
;  745     0872  1 !       This routine takes a verb node for the FOR verb, and a string
;  746     0873  1 !       descriptor for the remaining (unparsed) input.
;  747     0874  1 !       A command execution tree is built. The form of the tree is:
;  748     0875  1 !
;  749     0876  1 !        -----------      -----------      -----------      -----------
;  750     0877  1 !       | verb node |-->--| noun node |-->--| noun node | -->-- | noun node |
;  751     0878  1 !        -----------      -----------      -----------      -----------
;  752     0879  1 !
;  753     0880  1 !       The first noun node contains a counted string with the name of the
;  754     0881  1 !       loop variable.
;  755     0882  1 !       The second noun node contains value descriptors with the lower and
;  756     0883  1 !       upper bounds, and loop increment
;  757     0884  1 !       The third noun node contains a counted string with the command list.
;  758     0885  1 !
;  759     0886  1 ! Formal Parameters
;  760     0887  1 !
;  761     0888  1 !       input_desc      - A longword containing the address of the
;  762     0889  1 !                         command input descriptor.
;  763     0890  1 !       verb_node       - A longword containing the address of the verb node.
;  764     0891  1 !       message_vect    - The address of a longword to contain the address
;  765     0892  1 !                         of a standard message argument vector.
;  766     0893  1 !
;  767     0894  1 ! Implicit Inputs
;  768     0895  1 !
;  769     0896  1 !       none
;  770     0897  1 !
;  771     0898  1 ! Implicit Outputs
;  772     0899  1 !
;  773     0900  1 !       On success, the command execution tree is constructed.
;  774     0901  1 !       On failure, a message argument vector is constructed or obtained.
;  775     0902  1 !
;  776     0903  1 ! Routine value
;  777     0904  1 !
;  778     0905  1 !       sts$k_success (1)       - Success. Command execution tree constructed.
;  779     0906  1 !       sts$k_severe  (4)       - Failure. Error encountered. Message argument
;  780     0907  1 !                                 constructed and returned.
;  781     0908  1 !
;  782     0909  1 ! Side Effects
;  783     0910  1 !
;  784     0911  1 !       Permanent storage is allocated for the string holding the action
;  785     0912  1 !       clause and for the string holding the loop variable name.
;  786     0913  1 !       This is released in DBG$NCIS_REMOVE after execution
;  787     0914  1 !       of the action clause.
;  788     0915  1 !
;  789     0916  1
;  790     0917  2     BEGIN
;  791     0918  2
;  792     0919  2     MAP
;  793     0920  2         input_desc  : REF dbg$stg_desc,
;  794     0921  2         verb_node       : REF dbg$verb_node;
;  795     0922  2
;  796     0923  2     BIND
```

```
;  797     0924  2          dbg$cs_comma            = UPLIT BYTE (1, dbg$k_comma),
;  798     0925  2          dbg$cs_cr               = UPLIT BYTE (1, dbg$k_car_return),
;  799     0926  2          dbg$cs_equal            = UPLIT BYTE (1, dbg$k_equal),
;  800     0927  2          dbg$cs_left_paren       = UPLIT BYTE (1, dbg$k_left_parenthesis),
;  801     0928  2          dbg$cs_by               = UPLIT BYTE (2, 'BY'),
;  802     0929  2          dbg$cs_do               = UPLIT BYTE (2, 'DO'),
;  803     0930  2          dbg$cs_to               = UPLIT BYTE (2, 'TO');
;  804     0931
;  805     0932  2      LOCAL
;  806     0933  2          link,                                   ! Temporary to hold links in the command
;  807     0934  2                                                  !    execution tree.
;  808     0935  2          noun_node : REF dbg$noun_node,          ! A node in the command execution tree.
;  809     0936  2          radix,                                  ! Holds the current radix setting.
;  810     0937  2          status;                                 ! Holds return status from subroutine
;  811     0938  2                                                  !    calls.
;  812     0939  2
;  813     0940  2
;  814     0941  2      ! Create and link a noun node
;  815     0942  2      !
;  816     0943  2      noun_node = dbg$get_tempmem (dbg$k_noun_node_size);
;  817     0944  2      verb_node[dbg$l_verb_object_ptr] = .noun_node;
;  818     0945  2
;  819     0946  2      ! Pick up the name of the loop counter.
;  820     0947  2      ! Note that dbg$nread_name allocates permanent storage for the name.
;  821     0948  2      ! This must be released in DBG$NCIS_REMOVE when the command buffer is
;  822     0949  2      ! no longer needed.
;  823     0950  2      !
;  824     0951  2      IF NOT dbg$nread_name (.input_desc,
;  825     0952  2                             noun_node [dbg$l_noun_value],
;  826     0953  2                             .message_vect)
;  827     0954  2      THEN
;  828     0955  2          RETURN sts$k_severe;
;  829     0956  2
;  830     0957  2      ! Eat the =
;  831     0958  2      !
;  832     0959  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_equal, 1)
;  833     0960  2      THEN
;  834     0961  2          report_error;
;  835     0962  2
;  836     0963  2      ! Create and link a noun node
;  837     0964  2      !
;  838     0965  2      link = noun_node [dbg$l_noun_link];
;  839     0966  2      noun_node = dbg$get_tempmem (dbg$k_noun_node_size);
;  840     0967  2      .link = .noun_node;
;  841     0968  2
;  842     0969  2      ! Determine the current radix.
;  843     0970  2      !
;  844     0971  2      radix  = .dbg$gb_radix[dbg$b_radix_input];
;  845     0972  2
;  846     0973  2      ! Obtain a value descriptor for the lower bound. The noun_value field
;  847     0974  2      ! points to this descriptor.
;  848     0975  2      !
;  849     0976  2      STATUS = DBG$NPARSE_EXPRESSION(.INPUT_DESC, .RADIX,
;  850     0977  2                                     NOUN_NODE [DBG$L_NOUN_VALUE],
;  851     0978  2                                     TOKEN$K_TERM_TO, .MESSAGE_VECT);
;  852     0979  2
;  853     0980  2      ! The return status should be "warning", meaning that an expression
```

```
;  854          0981  2      ! was parsed and further input reamins. If an expression was parsed
;  855          0982  2      ! but no input remains, then DBG$NPARSE_EXPRESSION will return success.
;  856          0983  2      ! In this context, it is an error since "REPEAT count" by itself
;  857          0984  2      ! is an error.
;  858          0985  2      !
;  859          0986  2      IF .status EQL sts$k_success
;  860          0987  2      THEN
;  861          0988  3          BEGIN
;  862          0989  3          .message_vect = dbg$nmake_arg_vect (dbg$_needmore);
;  863          0990  3          RETURN sts$k_severe;
;  864          0991  3          END;
;  865          0992  2
;  866          0993  2      ! Severe status is also an error.
;  867          0994  2      !
;  868          0995  2      IF .status EQL sts$k_severe
;  869          0996  2      THEN
;  870          0997  2          RETURN sts$k_severe;
;  871          0998  2
;  872          0999  2      ! Eat the "TO".
;  873          1000  2      !
;  874          1001  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_to, 2)
;  875          1002  2      THEN
;  876          1003  2          report_error;
;  877          1004  2
;  878          1005  2      ! Obtain a value descriptor for the upper bound. The noun_value2 field
;  879          1006  2      ! points to this descriptor.
;  880          1007  2      !
;  881          1008  2      STATUS = DBG$NPARSE_EXPRESSION(.INPUT_DESC, .RADIX,
;  882          1009  2                                     NOUN_NODE [DBG$L_NOUN_VALUE2],
;  883          1010  2                                     TOKEN$K_TERM_BY, .MESSAGE_VECT);
;  884          1011  2
;  885          1012  2
;  886          1013  2      ! The return status should be "warning", meaning that an expression
;  887          1014  2      ! was parsed and further input reamins. If an expression was parsed
;  888          1015  2      ! but no input remains, then DBG$NPARSE_EXPRESSION will return success.
;  889          1016  2      ! In this context, it is an error since "REPEAT count" by itself
;  890          1017  2      ! is an error.
;  891          1018  2      !
;  892          1019  2      IF .status EQL sts$k_success
;  893          1020  2      THEN
;  894          1021  3          BEGIN
;  895          1022  3          .message_vect = dbg$nmake_arg_vect (dbg$_needmore);
;  896          1023  3          RETURN sts$k_severe;
;  897          1024  3          END;
;  898          1025  2
;  899          1026  2      ! Severe status is also an error.
;  900          1027  2      !
;  901          1028  2      IF .status EQL sts$k_severe
;  902          1029  2      THEN
;  903          1030  2          RETURN sts$k_severe;
;  904          1031  2
;  905          1032  2      ! Check for BY clause.
;  906          1033  2      !
;  907          1034  2      IF dbg$nmatch (.input_desc, dbg$cs_by, 2)
;  908          1035  2      THEN
;  909          1036  3          BEGIN
;  910          1037  3
```

```
;  911     1038  3          ! Obtain a value descriptor for the increment.
;  912     1039  3          !
;  913     1040  3          STATUS = DBG$NPARSE_EXPRESSION(.INPUT_DESC, .RADIX,
;  914     1041  3                                         NOUN_NODE [DBG$L_ADJECTIVE_PTR],
;  915     1042  3                                         TOKEN$K_TERM_DO, .MESSAGE_VECT);
;  916     1043  3
;  917     1044  3          ! The return status should be "warning", meaning that an expression
;  918     1045  3          ! was parsed and further input reamins. If an expression was parsed
;  919     1046  3          ! but no input remains, then DBG$NPARSE_EXPRESSION will return success.
;  920     1047  3          ! In this context, it is an error since "FOR I=1 TO N BY" by itself
;  921     1048  3          ! is an error.
;  922     1049  3          !
;  923     1050  3          IF .status EQL sts$k_success
;  924     1051  3          THEN
;  925     1052  4              BEGIN
;  926     1053  4              .message_vect = dbg$nmake_arg_vect (dbg$_needmore);
;  927     1054  4              RETURN sts$k_severe;
;  928     1055  3              END;
;  929     1056  3
;  930     1057  3          ! Severe status is also an error.
;  931     1058  3          !
;  932     1059  3          IF .status EQL sts$k_severe
;  933     1060  3          THEN
;  934     1061  3              RETURN sts$k_severe;
;  935     1062  3
;  936     1063  3          END
;  937     1064  2
;  938     1065  2      ELSE
;  939     1066  2          noun_node [dbg$l_adjective_ptr] = 0;
;  940     1067  2
;  941     1068  2      ! Eat the "DO".
;  942     1069  2      !
;  943     1070  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_do, 2)
;  944     1071  2      THEN
;  945     1072  2          report_error;
;  946     1073  2
;  947     1074  2      ! Allocate and link a noun node for the action clause.
;  948     1075  2      !
;  949     1076  2      link = noun_node [dbg$l_noun_link];
;  950     1077  2      noun_node = dbg$get_tempmem (dbg$k_noun_node_size);
;  951     1078  2      .link = .noun_node;
;  952     1079  2
;  953     1080  2      ! Eat the left parenthesis which we require be present.
;  954     1081  2      !
;  955     1082  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_left_paren, 1)
;  956     1083  2      THEN
;  957     1084  2          report_error;
;  958     1085  2
;  959     1086  2      ! Put a pointer to the counted string representing the action
;  960     1087  2      ! clause into the second noun node. (Note - the counted string
;  961     1088  2      ! is constructed out of "permanent" memory which is released
;  962     1089  2      ! in DBG$NCIS_REMOVE).
;  963     1090  2      ! The third argument indicates that save_break_buffer is not being
;  964     1091  2      ! called during parsing of a SET BREAK DO (The routine behaves
;  965     1092  2      ! slightly differently in that case)
;  966     1093  2      !
;  967     1094  2      dbg$nsave_break_buffer (.input_desc, noun_node [dbg$l_noun_value]);
```

```
;  968          1095  2
;  969          1096  2      ! Return success.
;  970          1097  2      !
;  971          1098  2      RETURN sts$k_success;
;  972          1099  2
;  973          1100  1      END;


                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                2C  01  00015 P.AAH:  .BYTE   1, 44                                     ;
                                0D  01  00017 P.AAI:  .BYTE   1, 13                                     ;
                                3D  01  00019 P.AAJ:  .BYTE   1, 61                                     ;
                                28  01  0001B P.AAK:  .BYTE   1, 40                                     ;
                                    02  0001D P.AAL:  .BYTE   2                                         ;
                                59  42  0001E         .ASCII  \BY\                                      ;
                                    02  00020 P.AAM:  .BYTE   2                                         ;
                                4F  44  00021         .ASCII  \DO\                                      ;
                                    02  00023 P.AAN:  .BYTE   2                                         ;
                                4F  54  00024         .ASCII  \TO\                                      ;

                                        DBG$CS_COMMA=           P.AAH
                                        DBG$CS_CR=              P.AAI
                                        DBG$CS_EQUAL=           P.AAJ
                                        DBG$CS_LEFT_PAREN=      P.AAK
                                        DBG$CS_BY=              P.AAL
                                        DBG$CS_DO=              P.AAM
                                        DBG$CS_TO=              P.AAN


                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                    OFFC 00000         .ENTRY  DBG$NPARSE_FOR, Save R2,R3,R4,R5,R6,R7,R8,- ; 0867
                                                               R9,R10,R11
                            5B 00000000G   00  9E 00002        MOVAB   DBG$GET_TEMPMEM, R11                ;
                            5A 00000000G   00  9E 00009        MOVAB   DBG$NPARSE_EXPRESSION, R10          ;
                            59 00000000G   00  9E 0001C        MOVAB   DBG$NMATCH, R9                      ;
                            58 00000000'   EF  9E 00017        MOVAB   DBG$CS_CR, R8                       ;
                                           04  DD 0001E        PUSHL   #4                                  ; 0943
                                68         01  FB 00020        CALLS   #1, DBG$GET_TEMPMEM                 ;
                                52         50  D0 00023        MOVL    R0, NOUN_NODE                       ;
                                50     08  AC  D0 00026        MOVL    VERB_NODE, R0                       ; 0944
                            08  A0         52  D0 0002A        MOVL    NOUN_NODE, 8(R0)                    ;
                                54     0C  AC  D0 0002E        MOVL    MESSAGE_VECT, R4                    ; 0953
                                           14  BB 00032        PUSHR   #^M<R2,R4>                          ; 0952
                                53     04  AC  D0 00034        MOVL    INPUT_DESC, R3                      ; 0951
                                           53  DD 00038        PUSHL   R3                                  ; 0952
                        00000000G  00          03  FB 0003A    CALLS   #3, DBG$NREAD_NAME                  ;
                                03             50  E8 00041    BLBS    R0, 2$                              ;
                                           00FD  31  00044 1$:  BRW     13$                                 ;
                                           01    DD  00047 2$:  PUSHL   #1                                  ; 0959
                                       02  A8    9F  00049      PUSHAB  DBG$CS_EQUAL                        ;
                                           53    DD  0004C      PUSHL   R3                                  ;
                                69         03    FB  0004E      CALLS   #3, DBG$NMATCH                      ;
                                3D         50    E9  00051      BLBC    R0, 3$                              ;
                                57     08  A2    9E  00054      MOVAB   8(R2), LINK                         ; 0965
```

```
                        04   DD 00058          PUSHL   #4                                      ; 0966
                    6B  01   FB 0005A          CALLS   #1, DBG$GET_TEMPMEM
                    52  50   D0 0005D          MOVL    R0, NOUN_NODE
                    67  52   D0 00060          MOVL    NOUN_NODE, (LINK)                       ; 0967
                    56 00000000G  00   9A 00063          MOVZBL  DBG$GB_RADIX, RADIX             ; 0971
                        54   DD 0006A          PUSHL   R4                                      ; 0978
                        0D   DD 0006C          PUSHL   #13                                     ; 0977
                        52   DD 0006E          PUSHL   NOUN_NODE
                  0048  8F   BB 00070          PUSHR   #^M<R3,R6>
                    6A  05   FB 00074          CALLS   #5, DBG$NPARSE_EXPRESSION
                    55  50   D0 00077          MOVL    R0, STATUS
                    01  55   D1 0007A          CMPL    STATUS, #1                              ; 0986
                        1E   13 0007D          BEQL    4$
                    04  55   D1 0007F          CMPL    STATUS, #4                              ; 0995
                        C0   13 00082          BEQL    1$
                        02   DD 00084          PUSHL   #2                                      ; 1001
                    0C  A8   9F 00086          PUSHAB  DBG$CS_TO
                        53   DD 00089          PUSHL   R3
                    69  03   FB 0008B          CALLS   #3, DBG$NMATCH
                    12  50   E8 0008E          BLBS    R0, 6$
                        01   DD 00091  3$:      PUSHL   #1                                      ; 1002
                  0108  8F   BB 00093          PUSHR   #^M<R3,R8>
                    69  03   FB 00097          CALLS   #3, DBG$NMATCH
                    03  50   E9 0009A          BLBC    R0, 5$
                      0080  31   0009D  4$:      BRW     10$
                      008C  31   000A0  5$:      BRW     11$
                        54   DD 000A3  6$:      PUSHL   R4                                      ; 1010
                        0E   DD 000A5          PUSHL   #14                                     ; 1009
                    0C  A2   9F 000A7          PUSHAB  12(NOUN_NODE)
                  0048  8F   BB 000AA          PUSHR   #^M<R3,R6>
                    6A  05   FB 000AE          CALLS   #5, DBG$NPARSE_EXPRESSION
                    55  50   D0 000B1          MOVL    R0, STATUS
                    01  55   D1 000B4          CMPL    STATUS, #1                              ; 1019
                        67   13 000B7          BEQL    10$
                    04  55   D1 000B9          CMPL    STATUS, #4                              ; 1028
                        86   13 000BC          BEQL    1$
                        02   DD 000BE          PUSHL   #2                                      ; 1034
                    06  A8   9F 000C0          PUSHAB  DBG$CS_BY
                        53   DD 000C3          PUSHL   R3
                    69  03   FB 000C5          CALLS   #3, DBG$NMATCH
                    1D  50   E9 000C8          BLBC    R0, 7$
                        54   DD 000CB          PUSHL   R4                                      ; 1042
                        05   DD 000CD          PUSHL   #5                                      ; 1041
                    04  A2   9F 000CF          PUSHAB  4(NOUN_NODE)
                  0048  8F   BB 000D2          PUSHR   #^M<R3,R6>
                    6A  05   FB 000D6          CALLS   #5, DBG$NPARSE_EXPRESSION
                    55  50   D0 000D9          MOVL    R0, STATUS
                    01  55   D1 000DC          CMPL    STATUS, #1                              ; 1050
                        3F   13 000DF          BEQL    10$
                    04  55   D1 000E1          CMPL    STATUS, #4                              ; 1059
                        05   12 000E4          BNEQ    8$
                        5C   11 000E6          BRB     13$                                     ; 1061
                    04  A2   D4 000E8  7$:      CLRL    4(NOUN_NODE)                            ; 1066
                        02   DD 000EB  8$:      PUSHL   #2                                      ; 1070
                    09  A8   9F 000ED          PUSHAB  DBG$CS_DO
                        53   DD 000F0          PUSHL   R3
                    69  03   FB 000F2          CALLS   #3, DBG$NMATCH
```

```
                                 1C         50  E9 000F5          BLBC    R0, 9$                                          ;
                                 57      08 A2  9E 000F8          MOVAB   8(R2), LINK                                     ; 1076
                                            04  DD 000FC          PUSHL   #4                                              ; 1077
                                 68         01  FB 000FE          CALLS   #1, DBG$GET_TEMPMEM                             ;
                                 52         50  D0 00101          MOVL    R0, NOUN_NODE                                   ;
                                 67         52  D0 00104          MOVL    NOUN_NODE, (LINK)                               ; 1078
                                            01  DD 00107          PUSHL   #1                                              ; 1082
                                         04 A8  9F 00109          PUSHAB  DBG$CS_LEFT_PAREN                               ;
                                            53  DD 0010C          PUSHL   R3                                              ;
                                 69         03  FB 0010E          CALLS   #3, DBG$NMATCH                                  ;
                                 34         50  E8 00111          BLBS    R0, 14$                                         ;
                                            01  DD 00114 9$:      PUSHL   #1                                              ; 1083
                                       0108 8F  BB 00116          PUSHR   #^M<R3,R8>                                      ;
                                 69         03  FB 0011A          CALLS   #3, DBG$NMATCH                                  ;
                                 0F         50  E9 0011D          BLBC    R0, 11$                                         ;
                                 000280D0   8F  DD 00120 10$:      PUSHL   #164048                                         ;
                00000000G        00         01  FB 00126          CALLS   #1, DBG$NMAKE_ARG_VECT                          ;
                                            12  11 0012D          BRB     12$                                             ;
                                            53  DD 0012F 11$:     PUSHL   R3                                              ;
                00000000G        00         01  FB 00131          CALLS   #1, DBG$NNEXT_WORD                              ;
                                            50  DD 00138          PUSHL   R0                                              ;
                00000000G        00         01  FB 0013A          CALLS   #1, DBG$NSYNTAX_ERROR                           ;
                                 64         50  D0 00141 12$:     MOVL    R0, (R4)                                        ;
                                 50         04  D0 00144 13$:     MOVL    #4, R0                                          ;
                                                04 00147          RET                                                     ;
                                            52  DD 00148 14$:     PUSHL   NOUN_NODE                                       ; 1094
                                            53  DD 0014A          PUSHL   R3                                              ;
                00000000G        00         02  FB 0014C          CALLS   #2, DBG$NSAVE_BREAK_BUFFER                      ;
                                 50         01  D0 00153          MOVL    #1, R0                                          ; 1098
                                                04 00156          RET                                                     ; 1100

; Routine Size:  343 bytes,    Routine Base:  DBG$CODE + 0315
```

```
;  975          1101  1 GLOBAL ROUTINE dbg$nexecute_for (verb_node,message_vect) =
;  976          1102  1 !++
;  977          1103  1 ! Functional Description
;  978          1104  1 !
;  979          1105  1 !       This routine performs the action associated with the FOR
;  980          1106  1 !       command.
;  981          1107  1 !
;  982          1108  1 ! Formal Parameters
;  983          1109  1 !
;  984          1110  1 !       verb_node       - A longword containing the address of the
;  985          1111  1 !                         head (verb) node.
;  986          1112  1 !       message_vect    - The address of a longword to contain the
;  987          1113  1 !                         address of an error message vector
;  988          1114  1 !
;  989          1115  1 ! Implicit Inputs
;  990          1116  1 !
;  991          1117  1 !       The command tree contains a verb node and a linked list
;  992          1118  1 !       of three noun nodes. (See the diagram in the header for
;  993          1119  1 !       DBG$NPARSE_FOR).
;  994          1120  1 !
;  995          1121  1 ! Routine Value
;  996          1122  1 !
;  997          1123  1 !       A completion code.
;  998          1124  1 !
;  999          1125  1 ! Completion Codes
; 1000          1126  1 !
; 1001          1127  1 !       sts$k_success (1)       - Success. Command executed
; 1002          1128  1 !       sts$k_severe (4)        - Failure. The command could not be
; 1003          1129  1 !                                 executed. An error message is constructed.
; 1004          1130  1 !
; 1005          1131  1 ! Side Effects
; 1006          1132  1 !
; 1007          1133  1 !       None
; 1008          1134  1 !--
; 1009          1135  2     BEGIN
; 1010          1136  2
; 1011          1137  2     MAP
; 1012          1138  2         verb_node : REF dbg$verb_node;
; 1013          1139  2
; 1014          1140  2     LOCAL
; 1015          1141  2         action_node:    REF dbg$noun_node,      ! The noun node for the action clause
; 1016          1142  2         action_string:  REF VECTOR[,BYTE],      ! Counted string with the action clause
; 1017          1143  2         bounds_node: REF dbg$noun_node,         ! Noun node with the upper and
; 1018          1144  2                                                 !     lower bounds
; 1019          1145  2         dummy,                                  ! Dummy output parameter
; 1020          1146  2         loop_incr,                              ! Loop increment
; 1021          1147  2         lower_bound,                            ! An integer with the lower
; 1022          1148  2                                                 !     loop bound
; 1023          1149  2         new_valdesc: REF dbg$valdesc,           ! A copy of a value descriptor
; 1024          1150  2         new_varname,                            ! Pointer to a copy of the
; 1025          1151  2                                                 !     variable name
; 1026          1152  2         symid_list,                             ! Points to a list of symids
; 1027          1153  2         upper_bound,                            ! An integer with the upper
; 1028          1154  2                                                 !     loop bound
; 1029          1155  2         valdesc: REF dbg$valdesc,               ! A pointer to a value
; 1030          1156  2                                                 !     descriptor
; 1031          1157  2         var_node: REF dbg$noun_node,            ! The noun node with the loop
```

```
;  1032          1158  2          !                                       !    variable
;  1033          1159  2          !       var_name: REF VECTOR[,BYTE],    ! The counted string with the
;  1034          1160  2          !                                       !    variable name
;  1035          1161  2          !       vax_desc:       dbg$stg_desc;   ! Target of the conversion from
;  1036          1162  2          !                                       !    the value descriptor
;  1037          1163  2          !                                       !    representing the count.
;  1038          1164  2          ! Recover the noun nodes.
;  1039          1165  2          !
;  1040          1166  2          var_node = .verb_node [dbg$l_verb_object_ptr];
;  1041          1167  2          var_name = .var_node [dbg$l_noun_value];
;  1042          1168  2          bounds_node = .var_node [dbg$l_noun_link];
;  1043          1169  2          valdesc = .bounds_node [dbg$l_noun_value];
;  1044          1170  2          action_node = .bounds_node [dbg$l_noun_link];
;  1045          1171  2          action_string = .action_node [dbg$l_noun_value];
;  1046          1172  2
;  1047          1173  2          ! Set up the vax descriptor for the bounds.
;  1048          1174  2          ! This vax descriptor is of type integer longword, and is used to convert the
;  1049          1175  2          ! language specific value descriptor for loop bounds to an
;  1050          1176  2          ! integer quantity that we can use in a language-independent way.
;  1051          1177  2          !
;  1052          1178  2          vax_desc [dsc$b_class] = dsc$k_class_s;
;  1053          1179  2          vax_desc [dsc$b_dtype] = dsc$k_dtype_l;
;  1054          1180  2          vax_desc [dsc$w_length] = 4;
;  1055          1181  2          vax_desc [dsc$a_pointer] = lower_bound;
;  1056          1182  2
;  1057          1183  2          ! Do the conversion from value descriptor to integer.
;  1058          1184  2          !
;  1059          1185  2          IF NOT dbg$ntype_conv (.valdesc,
;  1060          1186  2                                 dbg$k_default,
;  1061          1187  2                                 dbg$k_vax_desc,
;  1062          1188  2                                 vax_desc,
;  1063          1189  2                                 .message_vect)
;  1064          1190  2          THEN
;  1065          1191  2              RETURN sts$k_severe;
;  1066          1192  2
;  1067          1193  2          ! Do the conversion again, this time picking up the upper bound.
;  1068          1194  2          !
;  1069          1195  2          vax_desc [dsc$a_pointer] = upper_bound;
;  1070          1196  2          IF NOT dbg$ntype_conv (.bounds_node [dbg$l_noun_value2],
;  1071          1197  2                                 dbg$k_default,
;  1072          1198  2                                 dbg$k_vax_desc,
;  1073          1199  2                                 vax_desc,
;  1074          1200  2                                 .message_vect)
;  1075          1201  2          THEN
;  1076          1202  2              RETURN sts$k_severe;
;  1077          1203  2
;  1078          1204  2          ! Do the conversion once again, this time with the loop increment.
;  1079          1205  2          !
;  1080          1206  2          IF .bounds_node [dbg$l_adjective_ptr] EQL 0
;  1081          1207  2          THEN
;  1082          1208  2              loop_incr = 1
;  1083          1209  2          ELSE
;  1084          1210  2              BEGIN
;  1085          1211  3              vax_desc [dsc$a_pointer] = loop_incr;
;  1086          1212  3              IF NOT dbg$ntype_conv (.bounds_node [dbg$l_adjective_ptr],
;  1087          1213  3                                     dbg$k_default,
;  1088          1214  3                                     dbg$k_vax_desc,
```

```
: 1089          1215  3                                   vax_desc,
: 1090          1216  3                                   .message_vect)
: 1091          1217  3          THEN
: 1092          1218  3              RETURN sts$k_severe;
: 1093          1219  3          END;
: 1094          1220  3
: 1095          1221  3      ! If the loop increment is zero then signal an error.
: 1096          1222  3      !
: 1097          1223  3      IF .loop_incr EQL 0
: 1098          1224  3      THEN
: 1099          1225  3          SIGNAL (dbg$_loopincr);
: 1100          1226  3
: 1101          1227  3      ! If the upper bound is below the lower bound, do nothing.
: 1102          1228  3      !
: 1103          1229  3      IF (.loop_incr GTR 0 AND .upper_bound LSS .lower_bound)
: 1104          1230  3      OR (.loop_incr LSS 0 AND .upper_bound GTR .lower_bound)
: 1105          1231  3      THEN
: 1106          1232  3          RETURN sts$k_success;
: 1107          1233  3
: 1108          1234  3      ! Make a value descriptor for the initial value of the loop variable.
: 1109          1235  3      !
: 1110          1236  3      new_valdesc = dbg$get_memory (dbg$k_valdesc_base_size+4);
: 1111          1237  3      new_valdesc[dbg$w_dhdr_length] = (dbg$k_valdesc_base_size * 4) + 16;
: 1112          1238  3      new_valdesc[dbg$b_dhdr_type] = dbg$k_value_desc;
: 1113          1239  3      new_valdesc[dbg$b_dhdr_lang] = .dbg$gb_language;
: 1114          1240  3      new_valdesc[dbg$b_dhdr_kind] = rst$k_data;
: 1115          1241  3      new_valdesc[dbg$b_dhdr_fcode] = rst$k_type_atomic;
: 1116          1242  3      new_valdesc[dbg$b_value_class] = dsc$k_class_s;
: 1117          1243  3      new_valdesc[dbg$b_value_dtype] = dsc$k_dtype_l;
: 1118          1244  3      new_valdesc[dbg$w_value_length] = 4;
: 1119          1245  3      new_valdesc[dbg$l_value_pointer] = new_valdesc[dbg$l_value_value0];
: 1120          1246  3      new_valdesc[dbg$l_value_value0] = .lower_bound;
: 1121          1247  3
: 1122          1248  3      ! Also make a copy of the variable name. This is because the original
: 1123          1249  3      ! varname pointer is being saved away by dbg$ncis_add and we don't
: 1124          1250  3      ! want to free it twice.
: 1125          1251  3      !
: 1126          1252  3      new_varname = dbg$get_memory (1+.var_name[0]/4);
: 1127          1253  3      ch$move (1+.var_name[0], .var_name, .new_varname);
: 1128          1254  3      IF NOT dbg$def_sym_add (.new_varname, define_value,
: 1129          1255  3                              .new_valdesc,
: 1130          1256  3                              FALSE, dummy, .message_vect)
: 1131          1257  3      THEN
: 1132          1258  3          RETURN sts$k_severe;
: 1133          1259  3
: 1134          1260  3      ! Add a link to the command input stream, containing the action
: 1135          1261  3      ! string and the upper bound.
: 1136          1262  3      !
: 1137          1263  3      IF NOT dbg$ncis_add (action_string[1], .action_string[0], cis_for,
: 1138          1264  3                  .upper_bound, .var_name, .loop_incr, .message_vect)
: 1139          1265  3      THEN
: 1140          1266  3          RETURN sts$k_severe;
: 1141          1267  3
: 1142          1268  3      ! Return success.
: 1143          1269  3      !
: 1144          1270  3      RETURN sts$k_success;
: 1145          1271  3
```

```
; 1146          1272  1     END; ! dbg$nexecute_repeat
; INFO#250                  L1:1229
; Referenced LOCAL symbol UPPER_BOUND is probably not initialized
; INFO#250                  L1:1229
; Referenced LOCAL symbol LOWER_BOUND is probably not initialized


                                                  0FFC 00000          .ENTRY  DBG$NEXECUTE_FOR, Save R2,R3,R4,R5,R6,R7,-      ; 1101
                                                                              R8,R9,R10,R11
                                        5E          1C  C2 00002      SUBL2   #28, SP                                         ;
                                        50      04  AC  D0 00005      MOVL    VERB_NODE, R0                                   ; 1166
                                        50      08  A0  D0 00009      MOVL    8(R0), VAR_NODE                                 ;
                                        56          60  D0 0000D      MOVL    (VAR_NODE), VAR_NAME                            ; 1167
                                        52      08  A0  D0 00010      MOVL    8(VAR_NODE), BOUNDS_NODE                        ; 1168
                                        51          62  D0 00014      MOVL    (BOUNDS_NODE), VALDESC                          ; 1169
                                        50      08  A2  D0 00017      MOVL    8(BOUNDS_NODE), ACTION_NODE                     ; 1170
                                        5B          60  D0 0001B      MOVL    (ACTION_NODE), ACTION_STRING                    ; 1171
                                    10  AE  01080004   8F  D0 0001E      MOVL    #17301508, VAX_DESC                             ; 1180
                                    14  AE              6E  9E 00026      MOVAB   LOWER_BOUND, VAX_DESC+4                         ; 1181
                                        58      08  AC  D0 0002A      MOVL    MESSAGE_VECT, R8                                ; 1189
                                                58  DD 0002E      PUSHL   R8                                              ;
                                            14  AE  9F 00030      PUSHAB  VAX_DESC                                        ; 1185
                                        7E      82  8F  9A 00033      MOVZBL  #130, -(SP)                                     ;
                                                01  DD 00037      PUSHL   #1                                              ;
                                                51  DD 00039      PUSHL   VALDESC                                         ;
                                00000000G       00  FB 0003B      CALLS   #5, DBG$NTYPE_CONV                              ;
                                                42  50 E9 00042      BLBC    R0, 2$                                          ;
                                    14  AE      04  AE 9E 00045      MOVAB   UPPER_BOUND, VAX_DESC+4                         ; 1195
                                                58  DD 0004A      PUSHL   R8                                              ; 1200
                                            14  AE  9F 0004C      PUSHAB  VAX_DESC                                        ; 1196
                                        7E      82  8F  9A 0004F      MOVZBL  #130, -(SP)                                     ;
                                                01  DD 00053      PUSHL   #1                                              ;
                                                0C  A2  DD 00055      PUSHL   12(BOUNDS_NODE)                                 ;
                                00000000G       00  FB 00058      CALLS   #5, DBG$NTYPE_CONV                              ;
                                                25  50 E9 0005F      BLBC    R0, 2$                                          ;
                                                04  A2  D5 00062      TSTL    4(BOUNDS_NODE)                                  ; 1206
                                                    06  12 00065      BNEQ    1$                                              ;
                                    08  AE              01  D0 00067      MOVL    #1, LOOP_INCR                                   ; 1208
                                                    20  11 0006B      BRB     3$                                              ;
                                    14  AE          08  AE 9E 0006D  1$:    MOVAB   LOOP_INCR, VAX_DESC+4                   ; 1211
                                                58  DD 00072      PUSHL   R8                                              ; 1216
                                            14  AE  9F 00074      PUSHAB  VAX_DESC                                        ; 1212
                                        7E      82  8F  9A 00077      MOVZBL  #130, -(SP)                                     ;
                                                01  DD 0007B      PUSHL   #1                                              ;
                                                04  A2  DD 0007D      PUSHL   4(BOUNDS_NODE)                                  ;
                                00000000G       00  FB 00080      CALLS   #5, DBG$NTYPE_CONV                              ;
                                                03  50 E8 00087  2$:    BLBS    R0, 3$                                          ;
                                                00AB    31  0008A      BRW     8$                                              ;
                                        59      08  AE  D0 0008D  3$:    MOVL    LOOP_INCR, R9                           ; 1223
                                                    0D  12 00091      BNEQ    4$                                              ;
                                            00028F18    8F  DD 00093      PUSHL   #167704                                         ; 1225
                                00000000G       00  FB 00099      CALLS   #1, LIB$SIGNAL                                  ;
                                                59  D5 000A0  4$:    TSTL    R9                                              ; 1229
                                                    09  15 000A2      BLEQ    6$                                              ;
```

```
                        6E      04 AE D1 000A4          CMPL    UPPER_BOUND, LOWER_BOUND                        ;
                                   03 18 000A8          BGEQ    6$                                              ;
                                0008F 31 000AA 5$:      BRW     9$                                              ;
                                   59 D5 000AD 6$:      TSTL    R9                                              ; 1230
                                   06 18 000AF          BGEQ    7$                                              ;
                        6E      04 AE D1 000B1          CMPL    UPPER_BOUND, LOWER_BOUND                        ;
                                   F3 14 000B5          BGTR    5$                                              ;
                                   0C DD 000B7 7$:      PUSHL   #12                                             ; 1236
                00000000G       00 01 FB 000B9          CALLS   #1, DBG$GET_MEMORY                              ;
                                57 50 D0 000C0          MOVL    R0, NEW_VALDESC                                 ;
                                67 30 B0 000C3          MOVW    #48, (NEW_VALDESC)                              ; 1237
                             02 A7      7A 8F 90 000C6      MOVB    #122, 2(NEW_VALDESC)                        ; 1238
                             03 A7 00000000G 00 90 000CB    MOVB    DBG$GB_LANGUAGE, 3(NEW_VALDESC)             ; 1239
                             06 A7      0602 8F B0 000D3    MOVW    #1538, 6(NEW_VALDESC)                       ; 1241
                             14 A7 01080004 8F D0 000D9     MOVL    #17301508, 20(NEW_VALDESC)                  ; 1244
                             18 A7      20 A7 9E 000E1      MOVAB   32(NEW_VALDESC), 24(NEW_VALDESC)            ; 1245
                             20 A7         6E D0 000E6      MOVL    LOWER_BOUND, 32(NEW_VALDESC)                ; 1246
                                50         66 9A 000EA      MOVZBL  (VAR_NAME), R0                              ; 1252
                                50         04 C6 000ED      DIVL2   #4, R0                                      ;
                                   01      A0 9F 000F0      PUSHAB  1(R0)                                       ;
                00000000G       00 01 FB 000F3          CALLS   #1, DBG$GET_MEMORY                              ;
                                5A 50 D0 000FA          MOVL    R0, NEW_VARNAME                                 ;
                                50 66 9A 000FD          MOVZBL  (VAR_NAME), R0                                  ; 1253
                                   50 D6 00100          INCL    R0                                              ;
                     6A         66 50 28 00102          MOVC3   R0, (VAR_NAME), (NEW_VARNAME)                   ;
                                   58 DD 00106          PUSHL   R8                                              ; 1256
                                   10 AE 9F 00108       PUSHAB  DUMMY                                           ; 1254
                                   7E D4 0010B          CLRL    -(SP)                                           ;
                                   57 DD 0010D          PUSHL   NEW_VALDESC                                     ; 1255
                                   05 DD 0010F          PUSHL   #5                                              ; 1254
                                   5A DD 00111          PUSHL   NEW_VARNAME                                     ;
                00000000G       00 06 FB 00113          CALLS   #6, DBG$DEF_SYM_ADD                             ;
                                1B 50 E9 0011A          BLBC    R0, 8$                                          ;
                                   58 DD 0011D          PUSHL   R8                                              ; 1264
                                0240 8F BB 0011F        PUSHR   #^M<R6,R9>                                      ;
                                  10 AE DD 00123        PUSHL   UPPER_BOUND                                     ;
                                   07 DD 00126          PUSHL   #7                                              ; 1263
                                7E 6B 3C 00128          MOVZWL  (ACTION_STRING), -(SP)                          ;
                                  02 AB 9F 0012B        PUSHAB  2(ACTION_STRING)                                ;
                00000000G       00 07 FB 0012E          CALLS   #7, DBG$NCIS_ADD                                ;
                                04 50 E8 00135          BLBS    R0, 9$                                          ;
                                50 04 D0 00138 8$:      MOVL    #4, R0                                          ; 1266
                                   04 013B              RET                                                     ;
                                50 01 D0 0013C 9$:      MOVL    #1, R0                                          ; 1270
                                   04 013F              RET                                                     ; 1272

; Routine Size:  320 bytes,    Routine Base:  DBG$CODE + 046C
```

```
;  1148          1273  1 GLOBAL ROUTINE dbg$nparse_repeat(input_desc, verb_node, message_vect) =
;  1149          1274  1 !
;  1150          1275  1 ! Functional Description
;  1151          1276  1 !
;  1152          1277  1 !       ATN parse network for the REPEAT verb.
;  1153          1278  1 !       This routine takes a verb node for the REPEAT verb, and a string
;  1154          1279  1 !       descriptor for the remaining (unparsed) input.
;  1155          1280  1 !       A command execution tree is built. The form of the tree is:
;  1156          1281  1 !
;  1157          1282  1 !        -----------       -----------       -----------
;  1158          1283  1 !       | verb node |-->--| noun node |-->--| noun node |
;  1159          1284  1 !        -----------       -----------       -----------
;  1160          1285  1 !
;  1161          1286  1 !       The first noun node points to a value descriptor for the count.
;  1162          1287  1 !       The second noun node points to a counted string with the action clause.
;  1163          1288  1 !
;  1164          1289  1 ! Formal Parameters
;  1165          1290  1 !
;  1166          1291  1 !       input_desc      - A longword containing the address of the
;  1167          1292  1 !                         command input descriptor.
;  1168          1293  1 !       verb_node       - A longword containing the address of the verb node.
;  1169          1294  1 !       message_vect    - The address of a longword to contain the address
;  1170          1295  1 !                         of a standard message argument vector.
;  1171          1296  1 !
;  1172          1297  1 ! Implicit Inputs
;  1173          1298  1 !
;  1174          1299  1 !       none
;  1175          1300  1 !
;  1176          1301  1 ! Implicit Outputs
;  1177          1302  1 !
;  1178          1303  1 !       On success, the command execution tree is constructed.
;  1179          1304  1 !       On failure, a message argument vector is constructed or obtained.
;  1180          1305  1 !
;  1181          1306  1 ! Routine value
;  1182          1307  1 !
;  1183          1308  1 !       sts$k_success (1)       - Success. Command execution tree constructed.
;  1184          1309  1 !       sts$k_severe  (4)       - Failure. Error encountered. Message argument
;  1185          1310  1 !                                 constructed and returned.
;  1186          1311  1 !
;  1187          1312  1 ! Side Effects
;  1188          1313  1 !
;  1189          1314  1 !       Permanent storage is allocated for the string holding the action
;  1190          1315  1 !       clause; this is released in DBG$NEXECUTE_REPEAT after execution
;  1191          1316  1 !       of the action clause.
;  1192          1317  1 !
;  1193          1318  1
;  1194          1319  2     BEGIN
;  1195          1320  2
;  1196          1321  2     MAP
;  1197          1322  2         input_desc  : REF dbg$stg_desc,
;  1198          1323  2         verb_node       : REF dbg$verb_node;
;  1199          1324  2
;  1200          1325  2     BIND
;  1201          1326  2         dbg$cs_cr               = UPLIT BYTE (1, dbg$k_car_return),
;  1202          1327  2         dbg$cs_left_paren       = UPLIT BYTE (1, dbg$k_left_parenthesis),
;  1203          1328  2         dbg$cs_do               = UPLIT BYTE (2, 'DO');
;  1204          1329  2
```

```
;  1205          1330  2     LOCAL
;  1206          1331  2         link,                               ! Temporary to hold links in the command
;  1207          1332  2                                             !     execution tree.
;  1208          1333  2         noun_node : REF dbg$noun_node,      ! A node in the command execution tree.
;  1209          1334  2         radix,                              ! Holds the current radix setting.
;  1210          1335  2         status;                             ! Holds return status from subroutine
;  1211          1336  2                                             !     calls.
;  1212          1337  2
;  1213          1338  2
;  1214          1339  2     ! Create and link a noun node
;  1215          1340  2     !
;  1216          1341  2     noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  1217          1342  2     verb_node[dbg$l_verb_object_ptr] = .noun_node;
;  1218          1343  2
;  1219          1344  2     ! Determine the current radix.
;  1220          1345  2     !
;  1221          1346  2     radix  = .dbg$gb_radix[dbg$b_radix_input];
;  1222          1347  2
;  1223          1348  2     ! Obtain a value descriptor for the count. The first noun node
;  1224          1349  2     ! points to this descriptor.
;  1225          1350  2     !
;  1226          1351  2     STATUS = DBG$NPARSE_EXPRESSION(.INPUT_DESC, .RADIX,
;  1227          1352  2                                    NOUN_NODE[DBG$L_NOUN_VALUE],
;  1228          1353  2                                    TOKEN$K_TERM_DO, .MESSAGE_VECT);
;  1229          1354  2
;  1230          1355  2
;  1231          1356  2     ! The return status should be "warning", meaning that an expression
;  1232          1357  2     ! was parsed and further input reamins. If an expression was parsed
;  1233          1358  2     ! but no input remains, then DBG$NPARSE_EXPRESSION will return success.
;  1234          1359  2     ! In this context, it is an error since "REPEAT count" by itself
;  1235          1360  2     ! is an error.
;  1236          1361  2     !
;  1237          1362  2     IF .status EQL sts$k_success
;  1238          1363  2     THEN
;  1239          1364  3         BEGIN
;  1240          1365  3         .message_vect = dbg$nmake_arg_vect (dbg$_needmore);
;  1241          1366  3         RETURN sts$k_severe;
;  1242          1367  2         END;
;  1243          1368  2
;  1244          1369  2     ! Severe status is also an error.
;  1245          1370  2     !
;  1246          1371  2     IF .status EQL sts$k_severe
;  1247          1372  2     THEN
;  1248          1373  2         RETURN sts$k_severe;
;  1249          1374  2
;  1250          1375  2     ! Eat the DO.
;  1251          1376  2     !
;  1252          1377  2     IF NOT dbg$nmatch (.input_desc, dbg$cs_do, 1)
;  1253          1378  2     THEN
;  1254          1379  3         BEGIN
;  1255          1380  3         .message_vect =
;  1256          1381  4             (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  1257          1382  4              THEN
;  1258          1383  4                  dbg$nmake_arg_vect (dbg$_needmore)
;  1259          1384  4              ELSE
;  1260          1385  3                  dbg$nsyntax_error (dbg$nnext_word (.input_desc)));
;  1261          1386  3         RETURN sts$k_severe;
```

```
;  1262          1387  2          END;
;  1263          1388  2
;  1264          1389  2      ! Allocate and link a noun node for the action clause.
;  1265          1390  2      !
;  1266          1391  2      link = noun_node [dbg$l_noun_link];
;  1267          1392  2      noun_node = dbg$get_tempmem(dbg$k_noun_node_size);
;  1268          1393  2      .link = .noun_node;
;  1269          1394  2
;  1270          1395  2      ! Eat the left parenthesis which we require be present.
;  1271          1396  2      !
;  1272          1397  2      IF NOT dbg$nmatch (.input_desc, dbg$cs_left_paren, 1)
;  1273          1398  2      THEN
;  1274          1399  3          BEGIN
;  1275          1400  3          .message_vect =
;  1276          1401  4              (IF dbg$nmatch (.input_desc, dbg$cs_cr, 1)
;  1277          1402  4               THEN
;  1278          1403  4                   dbg$nmake_arg_vect (dbg$_needmore)
;  1279          1404  4               ELSE
;  1280          1405  5                   BEGIN
;  1281          1406  5                   SIGNAL(dbg$_needparen);
;  1282          1407  5                   dbg$nsyntax_error (dbg$nnext_word (.input_desc))
;  1283          1408  5                   END);
;  1284          1409  3          RETURN sts$k_severe;
;  1285          1410  2          END;
;  1286          1411  2
;  1287          1412  2      ! Put a pointer to the counted string representing the action
;  1288          1413  2      ! clause into the second noun node. (Note - the counted string
;  1289          1414  2      ! is constructed out of "permanent" memory which is released
;  1290          1415  2      ! in DBG$NEXECUTE_REPEAT).
;  1291          1416  2      ! The third argument indicates that save_break_buffer is not being
;  1292          1417  2      ! called during parsing of a SET BREAK DO (The routine behaves
;  1293          1418  2      ! slightly differently in that case)
;  1294          1419  2      !
;  1295          1420  2      dbg$nsave_break_buffer (.input_desc, noun_node [dbg$l_noun_value]);
;  1296          1421  2
;  1297          1422  2      ! Return success.
;  1298          1423  2      !
;  1299          1424  2      RETURN sts$k_success;
;  1300          1425  2
;  1301          1426  1      END;


                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                0D  01  00026 P.AAO:  .BYTE   1, 13                                    ;
                                28  01  00028 P.AAP:  .BYTE   1, 40                                    ;
                                    02  0002A P.AAQ:  .BYTE   2                                        ;
                                4F  44  0002B         .ASCII  \DO\                                     ;

                                        DBG$CS_CR=            P.AAO
                                        DBG$CS_LEFT_PAREN=    P.AAP
                                        DBG$CS_DO=            P.AAQ

                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0
```

```
                                 00FC 00000          .ENTRY  DBG$NPARSE_REPEAT, Save R2,R3,R4,R5,R6,R7    ; 1273
                          57 00000000G   00   9E 00002          MOVAB   DBG$GET_TEMPMEM, R7
                          56 00000000G   00   9E 00009          MOVAB   DBG$NMATCH, R6
                          55 00000000'   EF   9E 00010          MOVAB   DBG$CS_CR, R5
                                         04   DD 00017          PUSHL   #4                                  ; 1341
                          67             01   FB 00019          CALLS   #1, DBG$GET_TEMPMEM
                          54             50   D0 0001C          MOVL    R0, NOUN_NODE
                          50       08    AC   D0 0001F          MOVL    VERB_NODE, R0                       ; 1342
                    08    A0             54   D0 00023          MOVL    NOUN_NODE, 8(R0)
                          50 00000000G   00   9A 00027          MOVZBL  DBG$GB_RADIX, RADIX                 ; 1346
                                   0C    AC   DD 0002E          PUSHL   MESSAGE_VECT                        ; 1353
                                         05   DD 00031          PUSHL   #5                                  ; 1352
                                         11   BB 00033          PUSHR   #^M<R0,R4>
                          52       04    AC   D0 00035          MOVL    INPUT_DESC, R2                      ; 1351
                                         52   DD 00039          PUSHL   R2                                  ; 1352
                00000000G   00           05   FB 0003B          CALLS   #5, DBG$NPARSE_EXPRESSION
                          53             50   D0 00042          MOVL    R0, STATUS
                          01             53   D1 00045          CMPL    STATUS, #1                          ; 1362
                                         44   13 00048          BEQL    2$
                          04             53   D1 0004A          CMPL    STATUS, #4                          ; 1371
                                         71   13 0004D          BEQL    6$
                                         01   DD 0004F          PUSHL   #1                                  ; 1377
                                   04    A5   9F 00051          PUSHAB  DBG$CS_DO
                                         52   DD 00054          PUSHL   R2
                          66             03   FB 00056          CALLS   #3, DBG$NMATCH
                          0C             50   E8 00059          BLBS    R0, 1$
                                         01   DD 0005C          PUSHL   #1                                  ; 1381
                                         24   BB 0005E          PUSHR   #^M<R2,R5>
                          66             03   FB 00060          CALLS   #3, DBG$NMATCH
                          44             50   E9 00063          BLBC    R0, 4$
                                         26   11 00066          BRB     2$                                  ; 1383
                          53       08    A4   9E 00068  1$:     MOVAB   8(R4), LINK                         ; 1391
                                         04   DD 0006C          PUSHL   #4                                  ; 1392
                          67             01   FB 0006E          CALLS   #1, DBG$GET_TEMPMEM
                          54             50   D0 00071          MOVL    R0, NOUN_NODE
                          63             54   D0 00074          MOVL    NOUN_NODE, (LINK)                   ; 1393
                                         01   DD 00077          PUSHL   #1                                  ; 1397
                                   02    A5   9F 00079          PUSHAB  DBG$CS_LEFT_PAREN
                                         52   DD 0007C          PUSHL   R2
                          66             03   FB 0007E          CALLS   #3, DBG$NMATCH
                          40             50   E8 00081          BLBS    R0, 7$
                                         01   DD 00084          PUSHL   #1                                  ; 1401
                                         24   BB 00086          PUSHR   #^M<R2,R5>
                          66             03   FB 00088          CALLS   #3, DBG$NMATCH
                          0F             50   E9 0008B          BLBC    R0, 3$
                                8F   000280D0   DD 0008E  2$:     PUSHL   #164048                             ; 1403
                00000000G   00             01   FB 00094          CALLS   #1, DBG$NMAKE_ARG_VECT
                                         1F   11 00098          BRB     5$
                                8F   00028743   DD 0009D  3$:     PUSHL   #165699                             ; 1406
                00000000G   00             01   FB 000A3          CALLS   #1, LIB$SIGNAL
                                         52   DD 000AA  4$:     PUSHL   R2                                  ; 1407
                00000000G   00             01   FB 000AC          CALLS   #1, DBG$NNEXT_WORD
                                         50   DD 000B3          PUSHL   R0
                00000000G   00             01   FB 000B5          CALLS   #1, DBG$NSYNTAX_ERROR
                          0C   BC           50   D0 000BC  5$:     MOVL    R0, @MESSAGE_VECT               ; 1401
                          50                 04   D0 000C0  6$:     MOVL    #4, R0                          ; 1409
                                                  04 000C3          RET
```

```
                                    14  BB 000C4 7$:    PUSHR   #^M<R2,R4>                              ; 1420
                                    02  FB 000C6       CALLS   #2, DBG$NSAVE_BREAK_BUFFER              ;
                 00000000G      00  01  D0 000CD       MOVL    #1, R0                                  ; 1424
                                50      04 000D0       RET                                             ; 1426

; Routine Size:  209 bytes,    Routine Base:  DBG$CODE + 05AC
```

```
;  1303          1427  1 GLOBAL ROUTINE dbg$nexecute_repeat (verb_node,message_vect) =
;  1304          1428  1 !++
;  1305          1429  1 ! Functional Description
;  1306          1430  1 !
;  1307          1431  1 !       This routine performs the action associated with the REPEAT
;  1308          1432  1 !       command.
;  1309          1433  1 !
;  1310          1434  1 ! Formal Parameters
;  1311          1435  1 !
;  1312          1436  1 !       verb_node       - A longword containing the address of the
;  1313          1437  1 !                         head (verb) node.
;  1314          1438  1 !       message_vect    - The address of a longword to contain the
;  1315          1439  1 !                         address of an error message vector
;  1316          1440  1 !
;  1317          1441  1 ! Implicit Inputs
;  1318          1442  1 !
;  1319          1443  1 !       The command tree contains a verb node and a linked list
;  1320          1444  1 !       of two noun nodes. (See the diagram in the header for
;  1321          1445  1 !       DBG$NPARSE_REPEAT).
;  1322          1446  1 !
;  1323          1447  1 ! Routine Value
;  1324          1448  1 !
;  1325          1449  1 !       A completion code.
;  1326          1450  1 !
;  1327          1451  1 ! Completion Codes
;  1328          1452  1 !
;  1329          1453  1 !       sts$k_success (1)       - Success. Command executed
;  1330          1454  1 !       sts$k_severe (4)        - Failure. The command could not be
;  1331          1455  1 !                                 executed. An error message is constructed.
;  1332          1456  1 !
;  1333          1457  1 ! Side Effects
;  1334          1458  1 !
;  1335          1459  1 !       None
;  1336          1460  1 !--
;  1337          1461  2     BEGIN
;  1338          1462  2
;  1339          1463  2     MAP
;  1340          1464  2         verb_node : REF dbg$verb_node;
;  1341          1465  2
;  1342          1466  2     LOCAL
;  1343          1467  2         action_node:    REF dbg$noun_node,      ! The noun node for the action clause
;  1344          1468  2         action_string:  REF VECTOR[,WORD],      ! Counted string with the action clause
;  1345          1469  2         count_node: REF dbg$noun_node,          ! The noun node for the count
;  1346          1470  2         count_value,                            ! The actual count
;  1347          1471  2         vax_desc:       dbg$stg_desc;           ! Target of the conversion from
;  1348          1472  2                                                 !    the value descriptor
;  1349          1473  2                                                 !    representing the count.
;  1350          1474  2
;  1351          1475  2     ! Recover the noun nodes.
;  1352          1476  2     !
;  1353          1477  2     count_node = .verb_node [dbg$l_verb_object_ptr];
;  1354          1478  2     action_node = .count_node [dbg$l_noun_link];
;  1355          1479  2
;  1356          1480  2     ! Set up the vax descriptor for the count.
;  1357          1481  2     ! This vax descriptor is of type integer longword, and is used to convert the
;  1358          1482  2     ! language specific value descriptor for a count to an
;  1359          1483  2     ! integer quantity that we can use in a language-independent way.
```

```
;  1360          1484  2     !
;  1361          1485  2     vax_desc [dsc$b_class] = dsc$k_class_s;
;  1362          1486  2     vax_desc [dsc$b_dtype] = dsc$k_dtype_l;
;  1363          1487  2     vax_desc [dsc$w_length] = 4;
;  1364          1488  2     vax_desc [dsc$a_pointer] = count_value;
;  1365          1489  2
;  1366          1490  2     ! Initialize count_value to 0
;  1367          1491  2     !
;  1368          1492  2     count_value = 0;
;  1369          1493  2
;  1370          1494  2     ! Do the conversion from value descriptor to boolean.
;  1371          1495  2     !
;  1372          1496  2     IF NOT dbg$ntype_conv (.count_node [dbg$l_noun_value],
;  1373          1497  2                            dbg$k_default,
;  1374          1498  2                            dbg$k_vax_desc,
;  1375          1499  2                            vax_desc,
;  1376          1500  2                            .message_vect)
;  1377          1501  2     THEN
;  1378          1502  2         RETURN sts$k_severe;
;  1379          1503  2
;  1380          1504  2     ! Recover the string.
;  1381          1505  2     !
;  1382          1506  2     action_string = .action_node [dbg$l_noun_value];
;  1383          1507  2
;  1384          1508  2     ! Add a link to the command input stream, containing the action
;  1385          1509  2     ! string and the repeat count.
;  1386          1510  2     !
;  1387          1511  2     IF NOT dbg$ncis_add (action_string[1], .action_string[0], cis_repeat,
;  1388          1512  2                          .count_value, 0, 0, .message_vect)
;  1389          1513  2     THEN
;  1390          1514  2         RETURN sts$k_severe;
;  1391          1515  2
;  1392          1516  2     ! Return success.
;  1393          1517  2     !
;  1394          1518  2     RETURN sts$k_success;
;  1395          1519  2
;  1396          1520  1     END; ! dbg$nexecute_repeat


                                        0004 00000          .ENTRY  DBG$NEXECUTE_REPEAT, Save R2                    ;  1427
                              5E        10   C2 00002          SUBL2   #16, SP                                         ;
                              50   04   AC   D0 00005          MOVL    VERB_NODE, R0                                   ;  1477
                              50   08   A0   D0 00009          MOVL    8(R0), COUNT_NODE                               ;
                              52   08   A0   D0 0000D          MOVL    8(COUNT_NODE), ACTION_NODE                      ;  1478
                         04   AE 01080004  8F   D0 00011          MOVL    #17301508, VAX_DESC                             ;  1487
                         08   AE           6E   9E 00019          MOVAB   COUNT_VALUE, VAX_DESC+4                         ;  1488
                                           6E   D4 0001D          CLRL    COUNT_VALUE                                     ;  1492
                                   08      AC   DD 0001F          PUSHL   MESSAGE_VECT                                    ;  1500
                                   08      AE   9F 00022          PUSHAB  VAX_DESC                                        ;  1496
                              7E   82      8F   9A 00025          MOVZBL  #130, -(SP)                                     ;
                                           01   DD 00029          PUSHL   #1                                              ;
                                           60   DD 0002B          PUSHL   (COUNT_NODE)                                    ;
                00000000G  00              05   FB 0002D          CALLS   #5, DBG$NTYPE_CONV                              ;
                              1D           50   E9 00034          BLBC    R0, 1$                                          ;
```

```
                                50          62  DO 00037          MOVL    (ACTION_NODE), ACTION_STRING                ; 1506
                                        08  AC  DD 0003A          PUSHL   MESSAGE_VECT                                ; 1512
                                            7E  7C 0003D          CLRQ    -(SP)                                       ; 1511
                                        0C  AE  DD 0003F          PUSHL   COUNT_VALUE                                 ; 1512
                                            04  DD 00042          PUSHL   #4                                          ; 1511
                                7E          60  3C 00044          MOVZWL  (ACTION_STRING), -(SP)                      ;
                                        02  A0  9F 00047          PUSHAB  2(ACTION_STRING)                            ;
                    00000000G   00          07  FB 0004A          CALLS   #7, DBG$NCIS_ADD                            ;
                                04          50  E8 00051          BLBS    R0, 2$                                      ;
                                50          04  D0 00054  1$:     MOVL    #4, R0                                      ; 1514
                                                04 00057          RET                                                 ;
                                50          01  D0 00058  2$:     MOVL    #1, R0                                      ; 1518
                                                04 0005B          RET                                                 ; 1520

; Routine Size:  92 bytes,    Routine Base:  DBG$CODE + 067D

; 1397          1521  1 END
; 1398          1522  0 ELUDOM


                                                                  .EXTRN  LIB$SIGNAL

;                               PSECT SUMMARY
;
;       Name                    Bytes                   Attributes
;
;  DBG$PLIT                       45  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(0)
;  DBG$CODE                     1753  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(0)


;                           Library Statistics
;
;                                    --------  Symbols  --------     Pages       Processing
;       File                         Total     Loaded    Percent    Mapped      Time
;
;  _$255$DUA28:[SYSLIB]LIB.L32;1      18619          9          0      1000      00:01.8
;  _$255$DUA28:[DEBUG.OBJ]STRUCDEF.L32;1
;                                        32          0          0         7      00:00.1
;  _$255$DUA28:[DEBUG.OBJ]DBGLIB.L32;1
;                                      1545         97          6        97      00:01.9
;  _$255$DUA28:[DEBUG.OBJ]DSTRECRDS.L32;1
;                                       418          2          0        31      00:00.4
;  _$255$DUA28:[DEBUG.OBJ]DBGMSG.L32;1
;                                       386          3          0        22      00:00.3
;  _$255$DUA28:[DEBUG.OBJ]DBGGEN.L32;1
;                                       150          0          0        12      00:00.3


; Information:  2
; Warnings:     0
; Errors:       0
```

```
;                                       COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:DBGIFTHEN/OBJ=OBJ$:DBGIFTHEN MSRC$:DBGIFTHEN/UPDATE=(ENH$:DBGIFTHEN)

; Size:          1753 code + 45 data bytes
; Run Time:         00:37.2
; Elapsed Time:     01:43.6
; Lines/CPU Min:     2454
; Lexemes/CPU-Min: 11235
; Memory Used:  186 pages
; Compilation Complete
```

DBGIFTHEN
LIS

DBGLANVEC
LIS

DBGLANGOP
LIS

DBGGEN
LIS

DBGLEVEL1
LIS